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For forty-eight years—IRON TRADE REVIEW

June 18, 1931

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Volume 88 Number 25

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

DOUBLE, double toil and trouble; fire, burn, and caldron, bubble"—thus chanted the witches of Macbeth as they brewed their evil potion. For industry today there is toil and trouble, too; for the past 20 months its caldron has been bubbling; and now, at what many hoped was the midnight of industry's stress. two portentous ingredients—freight rates and coal strikes—are stirred into the "hell-broth." Whether the strikes are local remonstrances or are symptomatic of a dangerous undertow in labor is not yet clear, but freight rates present a pressing problem—perhaps an opportunity. Steel, like other industries, must decide whether to accept or opppose the 15 per cent advance now sought (Page 23), and hence is asking:

Would New Rates Start Prices Up?

Would the advance prove beneficial to business as a whole? Would it ultimately stimulate the consumption of iron and steel? Might it exert a psychological influence and stem the downward trend in commodity prices? Can steel executives, prodding their own industry to obtain remunerative prices, consistently object to the railroads' doing that very thing? But help or hindrance, any revision of rates would be upsetting. Assembly costs on a ton of steel (Page 25) might be raised $2; on iron ore alone in a normal season the added freight bill (Page 24) would be upward of $12,000,000. Chicago, railroad center, is lukewarm to the idea of an advance; Pittsburgh and the East are passive as yet.

'Red' Rash Breaks Out in Coal Fields

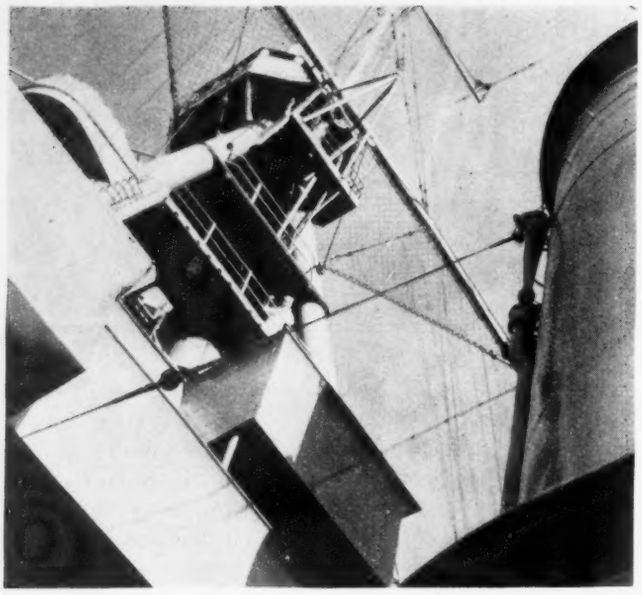
Freight rates and coal strikes—how they kept the caldron of industry bubbling in the hectic, postwar adjustment period. . . . Thus far the difficulties in the northern bituminous fields appear localized; neither the supply nor the price of coal and coke have been influenced (Page 27), but trouble has broken through at more places and communistic agitation is out in the open. At southern Ohio mines, William Z. Foster, remembered as one of the leaders of the steel strike of 1919, is a radical agitator . . . . It is to quiet labor and smother communistic propaganda that a group is proposing (Page 27) a 10-year program of bettering labor's condition, a program characterized as a warm-blooded 10-year plan in contrast to Russia's cold-blooded 5-year plan.

A Scrap Trade with No 'Shorts'?

With the iron and steel works dovetailing into her 5-year program under construction, Russia is beginning to plan a scrap industry. She has turned (Page 29) to the Institute of Scrap Iron and Steel for advice concerning the collection and preparation of 400,000 tons of scrap annually, at the outset. . . . Since the government in

Photo by Eugene Hutchinson, Chicago

Slanting rays of sunlight metamorphose ribbons of steel into strands of gold in the wire mill of the Colorado Fuel & Iron Co. at Pueblo, Colo.



Acme—P & A Photo

Disarmament conferences have reduced the volume of naval construction, but even the smaller craft now permissible show how versatile is the use of steel. Pictured above is the cruiser Northampton

Russia will constitute the scrap industry; there will be no necessity for setting up a trade practice code, such as the federal trade commission has just revised (Page 28) for the domestic scrap trade.

New Models Bolster Auto Output

Fortunate it is for steel that some manufacturers of automobiles stipulated a reservation for 1931 when they acquiesced in the program of the industry to concentrate model changes at the January shows. Had not two manufacturers become more active last week in assembling new models, automobile output (Page 99) would have declined appreciably. . . . Even at next January's shows there may be fewer innovations than usual (Page 33), manufacturers believing the slack retail market has left much capital in recent changes unrealized. . . . Despite reduced appropriations for research, considerable experimental work is being done (Page 33) with twelve-cylinder motors. Engineers also are probing the European departure of mounting engines near the rear axle. . . . Speculation concerning Ford changes (Pages 33-39) will not down.

Cigars No Longer Mellow Customers

Retrenchment, such as automotive engineers have experienced, has put a premium on ingenuity in devising economies. Some steel sales managers, for example (Page 25) no longer pass out cigars to customers; steel salesmen are wearing out their own shoe leather instead of company gasoline . . . . But somebody still has money, as a manufacturer of cash registers is doubling (Page 32) last year's sales. . . . And enough spirit is left in the industry to celebrate anniversaries. Last week it was Gary's 25th birthday; this week (Page 27) it is the 40th anniversary of the first commercial shipment of iron ore from the Mesabi.

Research Proceeds at Half-Speed

In steel, as in automobiles, research has been curtailed but not wholly abandoned . . . . Development of better nitriding steels is being prosecuted constantly (Page 46), several new analyses lending themselves readily to improved practice. Producers are learning not to nitride too long . . . . Eight years of experience with welded-on overlays or hardfacing have been attended by more or less mediocre success, but recent developments point (Page 39) to a wider application of this surfacing method. A greatly improved microstructure of overlay metal results from applying the material in a protective atmosphere, produced by coating electrodes with a flux which forms the protective gas when melted. Improved methods of applying the hardfacing are said to be imminent.

Steel X-Rays Gloom, Sees Improvement

Hope springs eternal, even in steel. This week steelmaking operations have eased off two points to 38 per cent (Page 72), new business is substantial only for buildings and bridges (Page 70), it is flying in the face of all seasonal indicators to look for improvement in midsummer, yet sentiment is buoyed (Page 65) by a number of intangibles. . . . Even the shrinkage of 7 per cent in unfilled orders of the Steel corporation in May is regarded charitably (Page 28) inasmuch as the declines in most previous Mays have been greater. . . . Important sheet manufacturers are emboldened to adopt the new classification, and some have gone further (Page 66) in raising base prices. . . . One way of bolstering markets is to legislate new uses; a congressman proposes that steel or concrete ties supplant wooden ones (Page 26) on all railroads.

New 'Yellow Peril' in Export Markets

Japan continues an international bad boy in the world steel markets. In successive weeks have come reports of Nippon exporting enameled ware and steel rails, and now come shipments of pig iron (Page 92) to the German market. . . . Typical of the harassed situation of European producers is the complaint of British users that domestic prices (Page 92) are excessive. . . . Continental foundrymen have just concluded a clinic at Paris (Page 53), among other things attributing defects in castings to the permeability of molding sand, back of which lies the skill of the molder.

Roads Ask 15 Per Cent Rise On Freight; Hold Differentials

WASHINGTON—On the ground that, after exhausting every reasonable avenue for effecting economies, they still are confronted with a grave financial emergency, the railroads June 17 formally petitioned the interstate commerce commission for a 15 per cent increase in freight rates.

This increase is sought for all freight charges, including joint rail and water rates, "with such adjustments in the case of coal, coke and certain other commodities as will preserve existing differentials."

Still stressing the emergency character of the situation, the railroads propose that the increase be permitted to become effective by the use of percentage supplements; that as to coal, coke and certain other commodities, specific tariffs complying with the ordinary requirements of tariff publication be filed.

4 Per Cent Return Is Seen

A strong argument is made that since such a 15 per cent advance would net the carriers less than 4 per cent on the value of their property, whereas the Transportation act of 1920 sanctioned a return of 5¾ per cent, the matter is not one for the determination of maximum reasonable rates.

For this reason, the carriers argue, the commission can limit its hearing and investigation to determining whether or not the general schedule of rates and charges proposed should be permitted to become effective without suspension. A speedy hearing with the co-operation of the various state commissions is suggested.

The brief, filed by representatives of eastern, western and southern lines, dwells entirely upon the financial situation of the railroads. It points out that, despite drastic economies, the revenues of the carriers have been depleted to the point where railway credit is in danger. It is claimed also that the average annual expenditure of Class I railroads for maintenance from 1925 to 1929 was $2,076,400,000, for 1930 only $1,724,800,000.

The question of whether railroad wages are reasonable under existing conditions may be raised, the brief states, citing the procedure for the determination of wages as laid down by federal law. This procedure is too long and controversial to be of any assistance in the present emergency, the railroads state. They say further:

"Concerning the wisdom of initiating such a controversy at this time, it is assumed that there will be no substantial difference of opinion. The policy of the federal government, concurred in by the managements of most leading industries, is that the revival of industry and commerce should be predicated, for the time being at least, on the maintenance of existing wages.

"Because of this policy and because of the fact that even in the absence of such a policy the question of railway wages would require a long period for its disposal, and because the condition of these carriers does not admit of such prolonged delay in the provision of a remedy, the managements of these carriers have not seriously considered at this time initiating controversies looking to the determination of the reasonableness of railway wages. They have concluded that if that question must be met and dealt with, it must be at a later stage."

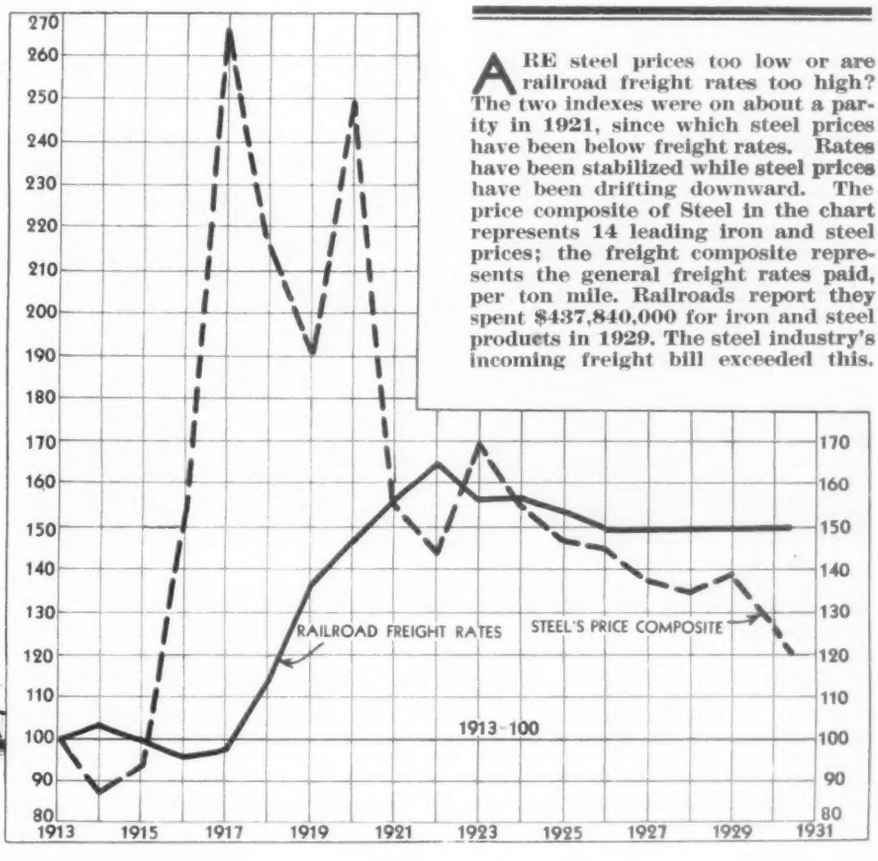
The railroads claim ample precedents for a percentage rise to meet an emergency. They point out that in 1914 an advance of 5 per cent was granted and in 1927 one of 15 per cent. It is vain to look for any hope from the passenger situation, the railroads maintain.

Washington Doubts Speedy Action on Rate Petition

WASHINGTON—Official Washington, accustomed to requests for urgent treatment of crises, of which the railroads' petition for a 15 per cent advance in freight rates is typical, is none too sanguine over the prospects of an immediate decision.

In their petition filed June 17, the railroads set no specific date but urged that the interstate commerce commission investigation be limited to a decision whether the increase should be made effective without suspension.

While officials of the commission will hazard no guess, the general opinion is that it will take much of the summer to conduct an investigation. For the proposed advance to be effective by Aug. 1 or Sept. 1, as some railroad officials hope, would set a record for treatment of a matter of such great



ARE steel prices too low or are railroad freight rates too high? The two indexes were on about a parity in 1921, since which steel prices have been below freight rates. Rates have been stabilized while steel prices have been drifting downward. The price composite of Steel in the chart represents 14 leading iron and steel prices; the freight composite represents the general freight rates paid, per ton mile. Railroads report they spent $437,840,000 for iron and steel products in 1929. The steel industry's incoming freight bill exceeded this.

importance and of wide application.

The commission might dispense with the usual lengthy hearing and ask the intervenors to submit briefs. The fastest dispatch of any proceeding was in 1920, when a case was decided 23 days after it was submitted. So important a matter as a general increase in all freight rates, however, ordinarily would require lengthy consideration by the commission as a whole.

While the proposal is to increase all freight rates 15 per cent, the preservation of certain differentials is likely to hold the general average down to 10 per cent, which would increase railway earnings about $400,000,000 annually.

Rate Proposal Threatens $12,000,000 Increase on Lake Iron Ore Freight

AT LEAST $12,000,000 will be added to the freight bill on Lake Superior iron ore in a normal season if the railroads are successful in their campaign to raise their freight rates 15 per cent in order to provide an additional 10 per cent in gross revenue.

The actual freight paid on the ore shipped from mines to upper lake docks in 1930 was $36,256,400. The freight from lower lake ports to interior furnaces was $25,707,000. The total was $61,963,400. If the 15 per cent increase had been in effect last year $9,294,510 more would have been paid.

But shipments in 1930 were only 75 per cent of normal, hence $12,393,670 would be the approximate cost of the proposed rate rise in a normal year. These figures do not include the relatively small loading charges at upper and lower lake ports, which would not be affected if the increase were limited to line hauls.

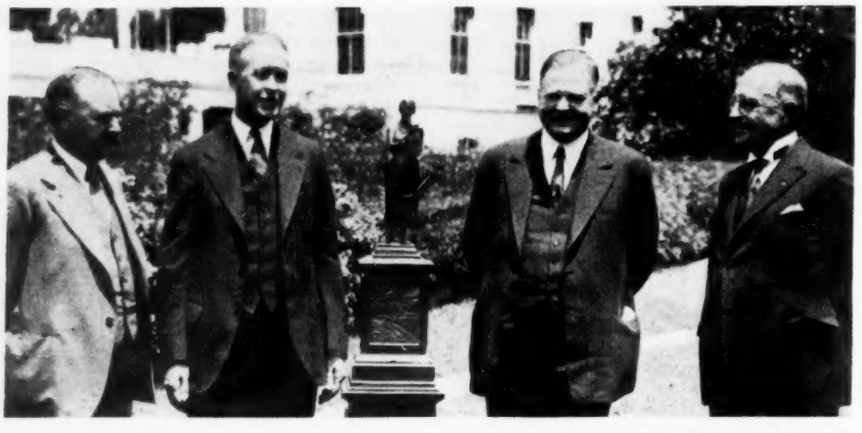
The freight between mines and upper lake ports is paid by producers, while that from lower lake ports to interior furnaces is borne by consumers. In 1930 the consumers paid in freight $25,707,000 for having 24,300,000 tons of lake ore hauled to their plants, an average of $1.06 a ton. If the freight rate is increased 15 per cent it will add approximately 16 cents a ton to the cost of the iron ore, delivered, and as the ore averages only 51.33 per cent metallic iron and nearly two tons are necessary to make a ton of pig iron, the increase in their costs would be about 30 cents a ton of pig iron.

Producers would face the problem of selling ore at the present price. Their railroad freight averages 77.8 cents a ton, and a 15 per cent increase would add approximately 10.7 cents a ton. With iron ore selling on a close margin this might lead to an advance in price.

Of the 46,582,982 tons of ore hauled from mines to upper lake ports last year, railroad subsidiaries of the United States Steel Corp. took 20,309,000 tons. Not all of the Corporation's ore, however, is handled over its own railroads. At the lower lakes only 7,500,000 tons is hauled over a Corporation railroad, the Bessemer & Lake Erie, from Conneaut, O., to valley and Pittsburgh furnaces.

Little more than half the lake ore is hauled to interior furnaces, the remainder being consumed at lake front plants. While the latter would not be affected by the increase in iron ore freight rates, their disadvantage would come in the freight on coal. These rates vary so much that general averages are difficult to obtain. The rate per ton of coking coal from the Connellsville district to the valley is $1.42, whereas to Cleveland it is $1.90. About 85 per cent of this coal is used in the mixture, the remaining 15 per cent being West Virginia smokeless, the rate on this grade, $2.64, being the same to the valley as to Cleveland.

In the past when horizontal freight rate increases were proposed the operators of inland iron and steel plants contended that they would be penalized relatively more than the lake front plants, due to the rates on ore from lower lake ports to the inland furnaces. These rates now range from 82 cents a ton to the Mahoning valley, to $1.30 to Johnstown, Pa., and $1.94, eastern Pennsylvania.



Wide World Photo

PRESIDENT PRESENTS TROPHIES TO CHAMPIONS OF MINE SAFETY

Nine iron ore mines in the Lake Superior district, operated by Pickands, Mather & Co., Cleveland, were entirely free from lost-time accidents in 1930. Of these, the West Vulcan, underground, and the Plymouth, open pit, had the best records. W. P. Chinn, general manager, received "Sentinels of Safety" trophies for the two mines from President Hoover at Washington, June 8. Trophies are offered by The Explosive Engineer, Wilmington, Del., the annual contest being judged by the bureau of mines. In the illustration, left to right: Mr. Chinn; A. B. Jessup, Coxe Bros. & Co., Jeddo, Pa.; President Hoover, and J. H. Shearer, Pennsylvania Central Light & Power Co., Coalmont, Pa. Mr. Jessup received the trophy for the anthracite mines, and Mr. Shearer for bituminous coal mines

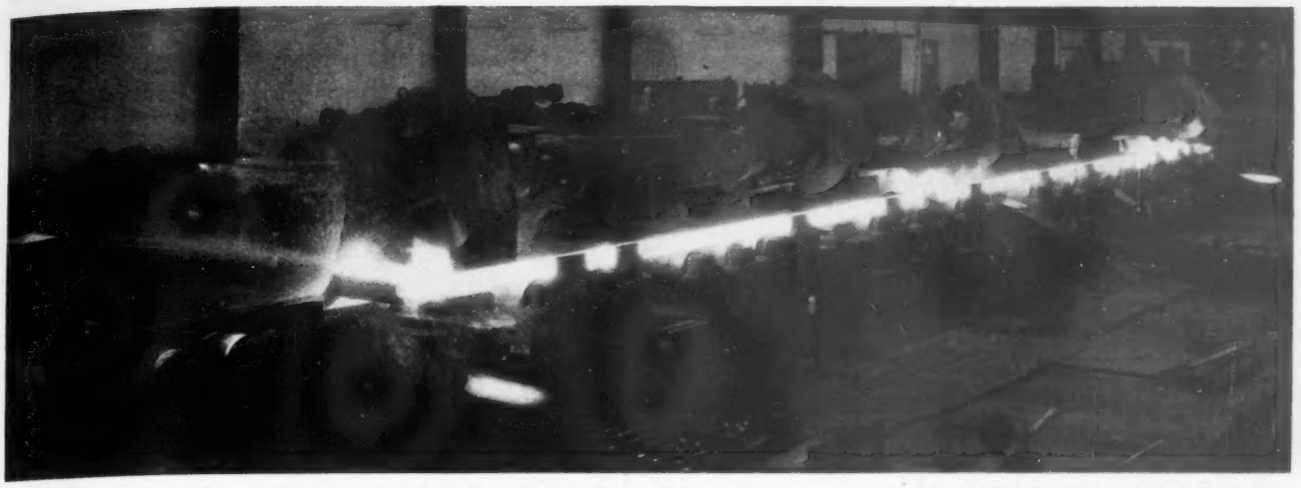
Chicago Growing Warmer To Proposed Rate Revision

CHICAGO—Sentiment of iron and steel shippers in this territory with respect to the railroads' purported plan of a 15 per cent blanket increase in freight rates seems to be turning.

Certain shippers, of course, feel that freight advances at this time may have more adverse than beneficial effects. But disapproval is giving way to actual enthusiasm, as word has gone out that the carriers are to use the expected added revenue for servicing, much needed maintenance, and purchase of new stock and equipment.

Opinion even is ventured that an increase might mark a turning point in the return of general business activity. Statements are heard that if the interstate commerce commission sees fit to grant the proposed increase without suspension, and the rates become effective, say Aug. 1, an almost immediate revival in more or less modified form of railroad buying of steel might result.

General opinion is that the increase for iron and steel products will be about 15 per cent. In that event, the rate on finished steel products from Pittsburgh to Chicago would be 39 cents instead of the existing 34 cents. The spread on steel from Pittsburgh to St. Louis, as compared with the Chicago rate, would be increased from 12½ cents to 14



THIS 152-POUND RAIL WILL TAKE 100,000-POUND AXLE LOADS AT 100 MILES PER HOUR, AND LIKE IT

At its Edgar Thomson works at Braddock, Pa., the Carnegie Steel Co. June 10 rolled the first 152-pound rails, the new heavy section with which the Pennsylvania railroad is experimenting, to be produced in the Pittsburgh district. Last week (STEEL for June 11, Page 16) was depicted the laying of a similar section rolled by an eastern steel producer. The Carnegie rails will be laid between Pittsburgh and Altoona, Pa.

cents. The rate from Chicago to St. Louis thus would be 29½ cents, compared with the existing 25½ cent rate.

While the proposed rate increase from Pittsburgh to Chicago may be 15 per cent, the additional amount applying on shipments from Chicago to various points would not be a net jump of 15 per cent in all cases. Other group rates would be affected similarly.

With two tons of iron ore consumed per ton of pig iron and 1.4 tons of coal for a ton of coke, it is expected that the proposed rate advance would result in an increase in the cost of assembling materials averaging about $1 per ton of pig iron, and might reflect as much as $2 per ton in the material assembly cost per ton of finished steel.

It is felt that ultimately the actual consumers of products shipped on the railroads must bear the additional rate increase, but it is becoming recognized that railroads have reached the limit of their operating economies, and the steady decrease in traffic makes it imperative for emergency measures to restore their credit.

Pittsburgh Skeptical; Its Short Haul Rates Reduced

PITTSBURGH—Steel company traffic officials in the Pittsburgh district take a rather disinterested attitude toward the proposed 15 per cent increase in freight rates, doubt being expressed by some that the measure will go through.

Rates on shipments of iron and steel products to consumers do not concern the producers materially so long as there is an equality in charges compared with other producing districts.

A general advance consequently would not provoke the opposition such as that occasioned recently as the result of the advance in short haul rates in the Pittsburgh district and the suspension of like advances in other centers. In the event of an increase freight charges merely would be passed on to the buyer in the form of higher delivered prices.

Similarly, however, mills would be forced to pay more for the raw materials shipped into the district were an advance in rates to become effective, and this phase of this situation naturally meets with disfavor. A rate increase of 15 per cent would mean a rise of about 40 cents a ton in the cost of producing pig iron.

The cost of hauling a ton of iron ore by rail from Lake Erie to Pittsburgh is about $1.15 so that the delivered price of the two tons of this material necessary for the production of a ton of pig iron would be advanced 35 cents by a 15 per cent boost in freight rates.

The rate on limestone varies according to the producing center, averaging around $1 a ton, and a 15 per cent rate increase would add about 5 cents to the iron cost. Most of the coal consumed by Pittsburgh by-product coke ovens is delivered by water so that a rail charge advance would have little effect upon the cost of blast furnace fuel.

Scrap prices also would be affected materially by the proposed rate advance, particularly the open-hearth grades since they represent the largest tonnage consumed. Hydraulic compressed sheets move from Detroit to Pittsburgh on a $4 rate, while eastern scrap takes a $5.70 rate.

A 15 per cent advance in freight charges would increase the delivered price of old material from those districts 60 to 85 cents, which would be reflected in the delivered cost to mills.

New freight rates on short haul shipments of iron and steel products have gone into effect in the Pittsburgh district. The new schedule was drawn up at the direction of the Pennsylvania public service commission following the protest of Pittsburgh shippers against the rates which became effective over the country a year ago.

The reduction instituted by the state service commission leaves the scale slightly higher than that effective prior to May 20, 1930, but results in a reduction from the freight paid during the past 12 months. Shippers waived claims for reparation on excess charges

Wave of Economy Washes Out Cigars, Towels, Mileage

NO MORE cigars for customers or for salesmen's meetings; halving the order for office towels; salesmen to make local calls on foot or by street car instead of on an automobile mileage basis—such are the rigors of economy which many steel companies have instituted.

Other means of reducing expenses, other than the obvious resort to reducing wages, dismissing surplus employes and staggering the work week include:

Closer scrutiny of "entertainment" on expense accounts.

Interoffice chores performed by employes themselves instead of calling messengers.

Reduction in mileage allowance for automobiles.

Absolute ban on purchase of new office furniture or equipment.

Using long distance telephone only for urgent messages, with greater resort to mails or leased wires.

Salesmen typing out their own reports instead of dictating them.

Turning out electric lights in the daytime.

paid during the time the deposed rates were under protest.

East Must Be Convinced Of Railroads' Plight

NEW YORK—If the steel industry assents to the proposed 15 per cent increase in railroad rates it will be because the industry believes the financial plight of the carriers to be relatively worse than that of other industries. There is much skepticism concerning the possibility of the advance being effective in the immediate future, in time to assist in the present crisis.

One angle of interest is the bearing the proposed increase and two pending rate readjustments will have upon the other. The latter rate cases pertain to eastern class rates and to western trunk line rates.

These schedules have been decided upon and are now in the hands of the printers. They were first to go into effect this month, but later the date was postponed until Dec. 3, this year. The question arises whether there will not be considerable confusion, with possible further postponement of these latter rates, or possibly a new adjustment all around.

The eastern class rate decision provides, in general, for increases on all classes from Class 4, inclusive, up. The western trunk line decision, briefly, allows for decreases in rates from eastern points into the West and slight increases from such important points farther west as Chicago.

Probably the last important change in freight rates of special interest to the steel industry was establishment of mileage rates on iron and steel articles in the eastern territory in May, 1930. There were many repercussions, with hearings still being conducted by the interstate commerce commission along the eastern seaboard.

In general, these changes represented a decrease on the long haul shipments and an increase on the short. Upon the instigation of steel shippers in the Pittsburgh district, the Pennsylvania commission allowed a revision on all shipments to Pennsylvania within a range of 100 miles from Pittsburgh. This revision went into effect June 5.

Foreseeing charges of discrimination, railroads have volunteered to make similar reductions at other leading steel producing centers, with July 1 fixed as the tentative effective date. Incidentally, the railroads hope that this reduction in short haul rates will be at least partially offset by diversion of traffic from motor trucks.

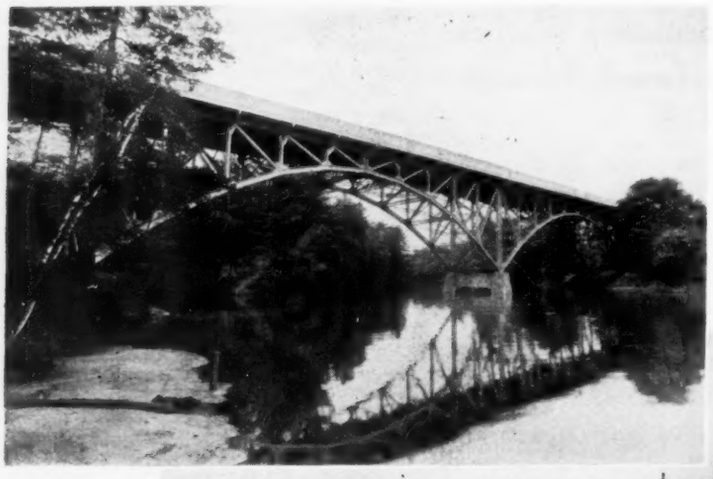
Two Bridges Chosen To Receive Third Annual Awards for Beauty in Design

WABASH avenue bridge in Chicago and Delton bridge in Sauk county, Wisconsin, have been judged the most beautiful bridges of their classes built in 1930 in the United States and Canada, according to a jury acting for the American Institute of Steel Construction Inc., New York. The bridges will be decorated with bronze plaques this fall, these being the third annual bridge awards made by the institute.

The Wabash avenue bridge is a bascule structure over the Chicago river, erected by the department of public works at a cost of $1,750,000. It was designed by Thomas G. Pihlfeldt and fabricated by American Bridge Co. The span is 239 feet; the roadway 90 feet wide.

The Delton bridge, best of bridges costing under $500,000, is a steel arch highway bridge, designed and erected by the Wisconsin state highway commission at a cost of about $54,000. Material was fabricated by the Lakeside Bridge & Steel Co. The structure comprises two spans, each 218 feet 10 inches in length; the roadway is 27 feet wide.

The jury of awards decided to make no awards in the class of bridges costing between $500,000 and $1,000,000, no entrant being of sufficient merit.



The Business Week In Washington

RAILROAD freight rates promise to enliven an otherwise dull summer. Formal petition of the railroads for a 15 per cent advance in freight rates was filed with the I.C.C. Wednesday, June 17. Hearings, at which both the carriers and interested shippers will be represented, probably will be held promptly. Thus far there is only speculation concerning the effective date of the rise, if granted; at best, it will be "several months," according to previous experience with rate matters.

□ □ □

Dr. Julius Klein, assistant secretary of commerce, stated in a speech last week that business recovery has actually begun.

□ □ □

Representative Dyer, of Missouri, has announced that he will introduce a bill in the next session of congress requiring railroads to replace wood-

en crossties with either steel or concrete.

□ □ □

L. W. Meekins, American commercial attache at Ottawa, Ont., reports a new trade agreement between Canada and Australia.

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President Hoover has issued an executive order providing that state officers may inspect individual income tax returns submitted to the federal government, under certain conditions.

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Lincoln Dixon, of Indiana, has been reappointed a member of the United States tariff commission for a term of six years from June 17.

Gerard Joins Woll in Ten Year Industrial Plan

The United States should adopt a 10-year plan of "democratic idealism" as an offset to the Soviet 5-year plan, according to Matthew Woll and James W. Gerard. Mr. Woll is vice president of the American Federation of Labor, and acting president of the National Civic Federation, which, he says "represents both employers and employes." Mr. Gerard, who was this country's ambassador to Germany at the time it entered the World war, is chairman of the National Civic Federation's commission on industrial inquiry. This commission recently has issued reports and recommendations which many employers have considered antagonistic.

Mr. Woll suggested the plan and Mr. Gerard will "invite the reactions of some 500 organizations to a proposal to meet in the great American industrial congress."

"Industrial balance is essential if the United States is to obtain and keep permanent prosperity," declares Mr. Woll. "There is a growing conviction that unless industry—using the term in the broadest sense—finds and applies a remedy, the federal government will attempt to find and apply it."

Inspects Gulf States Steel

Birmingham, Ala.—W. L. Allen, president of the Sheffield Steel Corp., Kansas City, Mo., a subsidiary of the American Rolling Mill Co., Middletown, O., is inspecting properties of the Gulf States Steel Co. No statement is available.

Youngstown Payrolls Hold

Youngstown, O.—Wage disbursements in Youngstown in May totaled $5,541,197, compared with $5,519,909 in April and $6,944,159 in May, 1930.

Sporadic Coal Strikes Fail To Affect Fuel Markets

DEMAND for coal and coke being light, the strike of coal miners in the western Pennsylvania, eastern Ohio and West Virginia fields so far has had little effect on the markets. Estimates as to the number of men idle in western Pennsylvania vary from 10,000 to 20,000, and in the other states, from 3000 to 5000. The trouble has not resulted in a scarcity of coal supplies, but operators have found it necessary to increase work at those mines that have not been forced to shut down.

Consumers do not appear alarmed over the prospects for the immediate future, because requirements are considerably restricted, and the strike is of comparatively small proportions. The Connellsville coal fields are unaffected, though steel companies' mines have been threatened. Connellsville coal and coke prices are reported slightly firmer.

The two rival labor organizations, United Mine Workers of America and the "rebel" National Miners' union, led by communists, have been fighting one another almost as energetically as they have been campaigning against the coal companies.

John L. Lewis, president, United Mine Workers, and the executive board, have appealed to President Hoover to call a conference with the mine operators, but the administration has adopted an attitude of "watchful waiting." The National Miners declare they will repudiate any agreement reached by the operators with the United Mine Workers.

William Z. Foster, national leader of communists in the United States, who was active in promoting the strike in the steel industry in 1919, has been jumping from one town to another in the coal fields, addressing strikers. "We will not starve; we will fight!" is his battle cry. Speaking to 1500 miners and their families at a picnic near Bellaire, O., he declared Governor Pinchot of Pennsylvania "is leading the strike breaking movement" because the governor has refused to call off state police, and more interesting, he referred to Pinchot "as the representative of capitalists."

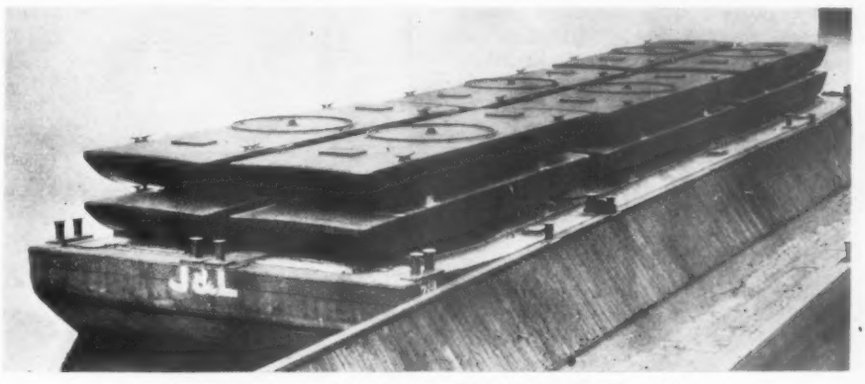
In the Ohio fields, the county sheriffs, local police and constables and members of the American Legion been breaking up assemblages of "reds."

The eight-hour day, higher wages, protests against alleged reductions in some instances, abolition of the average system, reinstatement of miners dismissed for union activities, and demands for union check weighmen are some of the issues at stake.

Some mine operators see the source of their trouble in intense rivalry between the two labor organizations. They express a willingness to deal with the United Mine Workers, or a responsible organization, whenever the fight between the two organizations is settled.

Celebrate Ore Discovery

The fortieth anniversary of the first discovery of a commercial deposit of iron ore on the Mesabi range was celebrated at Mountain Iron, Minn., June 13. A parade, a reunion of old



BARGING "BABY BARGES" DOWN THE OHIO

United States engineers of the Louisville, Ky., district will use these steel pontoons or "baby barges," built by the Jones & Laughlin Steel Corp., Pittsburgh, for supporting pipe lines for hydraulic dredges employed in maintaining the river channel between Pittsburgh and Cairo, Ill. Each pontoon is 40 feet long, 12 feet wide, 3 feet deep

settlers, a public meeting and the unveiling of a monument were the features of the day in which miners, mining engineers and superintendents participated. The ore body was actually discovered by the Merritt brothers, Nov. 16, 1890, and the first shipment from the Mountain Iron mine was made in November, 1892.

Ten Rules in Scrap Code Approved by Commission

Washington—In revising the trade practice codes of about 80 industries, the federal trade commission has retained and revised ten rules in the code drawn up by the iron and steel scrap industry with the cooperation of the Institute of Scrap Iron and Steel Inc., New York.

The ten rules which the commission has retained for the scrap industry include top dressing of cars, defamation of competitors, inducing breach of contract, commercial bribery, repudiation of contract, overbilling of shipments, arbitration, costs, trade practice committees, and fictitious bills of lading.

The two rules which the commission declined to approve cover the circularization of the industry with misleading price quotations and failure to give credit for overweight.

Simpson Heads Foundry Equipment Manufacturers

Foundry Equipment Manufacturers association, meeting in Cleveland June 12, elected H. S. Simpson, National Engineering Co., Chicago, president, and J. P. Jones, General Electric Co., Schenectady, vice president.

These officers with H. S. Hersey, C. O. Bartlett & Snow Co., Cleveland, M. C. Sammons, Wadsworth Core Machine & Equipment Co., Akron, O., and H. J. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa., compose the board of directors.

R. P. Dryer, who has been acting as secretary-treasurer, resigned to devote his entire time to the Steel Office Furniture institute. D. M. Avey, *The Foundry*, Cleveland, was elected secretary-treasurer.

Sheet & Tube Stock Value Hearing Postponed

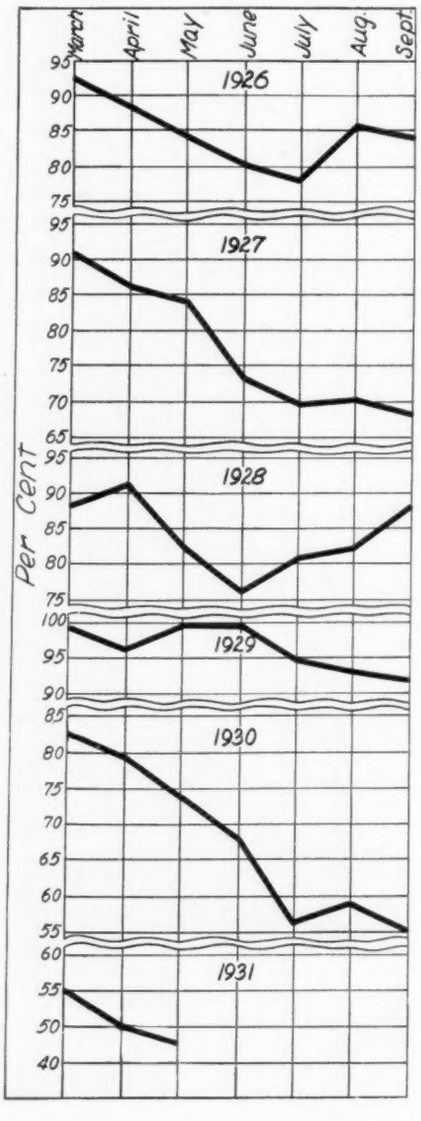
Youngstown, O.—Hearing of the 22 suits filed in Mahoning county common pleas court to determine a fair cash value for the Youngstown Sheet & Tube Co.'s common stock, owners of which opposed the company's merger with Bethlehem Steel Corp., has been postponed to the fall term of court. Counsel for both sides agreed to the postponement when the cases were called June 15. Stock for which $110 was offered by merger proponents now is quoted around $49.

Colorado Repairs Stack

Colorado Fuel & Iron Co. began repairs June 1, to its D blast furnace at Pueblo, Colo., to cost nearly $250,000 and require three months. Repairs include a new steel shell, new brick lining to the furnace proper, relining of one stove and repairs to the three other stoves. The D furnace was blown in in April, 1902, and has been in practically continuous operation since.

Spring Ingot Decline Is Usual, Past Years Show

Lessened ingot production from April to May has been the rule for six years except for the unusual 1929, when an upturn was made. The accompanying chart shows comparative curves for steel ingot production during the summer months, with 1931 presenting figures for April and May.



Curves are based on statistics of the American Iron and Steel institute.

Actual Machine Tool Orders Off in May

Total actual gross order index for machine tools in May dropped for the third successive month. Decline was confined to both A and B classifications, as C class showed an increase. Shipments during May exceeded orders received and cancellations were about twice as heavy in May as in April. Figures for actual orders follow:

1930	*Index A	*Index B	*Index C	Total
May	119.5	182.5	145.6	135.1
June	121.8	132.7	162.2	125.8
July	78.4	124.4	132.9	91.1
Aug.	102.4	153.9	119.1	113.8
Sept.	129.7	138.8	215.9	135.9
Oct.	81.3	112.3	118.1	90.1
Nov.	56.0	67.8	96.6	60.4
Dec.	58.4	92.7	126.6	68.8
(Yr. av.)	119.8	146.4	164.7	127.8
1931				
Jan.	64.6	75.1	68.6	66.9
Feb.	68.3	129.8	93.1	83.7
March	109.2	133.4	180.9	117.6
April	97.7	130.3	95.0	105.1
May	81.4	104.5	105.7	87.2

*Note—Index A, base over $50,000; Index B, bases $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

Sheet Sales Are Reduced 25 Per Cent in May

Daily average sales of sheets in May reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, amounted to 4794 net tons, a decrease of 25 per cent from 6400 tons in April. The decline in daily average production was less severe, from 7120 tons in April to 6511 tons in May, while the reduction in shipments was from 7039 tons to 6191 tons.

Sales in May totaled 148,612 tons; production, 201,846 tons; and shipments, 191,942 tons. Unfilled tonnage as of June 1 amounted to 296,731 tons. Total sheet capacity in the United States for May was approximately 527,900 tons, and the capacity on which the association's figures are based is 356,850 tons.

Steel Bookings Down; Lose 7 Per Cent from April

Decline of 277,277 tons in the unfilled tonnage of the United States Steel Corp., as of May 31, brought the total 7.11 per cent lower than for April 30. Total tonnage on books May 31 was 3,620,452 tons and April 30 it was 3,897,729 tons. The decline is less than the average for May for seven years past, and only in 1926 and 1929 was the May loss smaller.

The average recession in May for seven years is 353,420 tons. Comparisons for recent months follow:

1930			
Jan. 31	4,468,710	51,517+	1.20+
Feb. 28	4,479,748	11,038+	0.25+
Mar. 31	4,570,653	90,905+	2.03+
April 30	4,354,220	216,433—	4.73—
May 31	4,059,227	294,993—	6.78—
June 30	3,968,064	91,163—	2.24—
July 31	4,022,055	53,991+	1.36+
Aug. 31	3,580,204	441,851—	10.9 —
Sept. 30	3,424,338	155,866—	4.35—
Oct. 31	3,481,763	57,425+	1.68+
Nov. 30	3,639,636	157,873+	4.53+
Dec. 31	3,943,596	303,960+	8.35+
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3 995 330	30.136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—

Enameled Sheet-Metal Ware Shipments in Slump

April shipments of all classes of enameled sheet-metal ware show a loss both from March of this year and April of last year, as the following department of commerce comparison shows:

In Dozens

	Total	White	Gray and Colored
1930			
April	318,431	124,562	193,869
4 mo.	1,323,864	480,699	843,165
May	290,617	114,709	175,908
June	247,861	90,151	157,710
July	213,420	70,718	142,702
Aug.	309,645	89,259	220,386
Sept.	297,622	97,262	200,360
Oct.	329,337	107,553	221,784
Nov.	263,365	79,719	183,646
Dec.	250,568	70,554	180,014
Year	3,526,299	1,200,624	2,325,675
1931			
Jan.	267,232	84,917	182,315
Feb.	289,205	96,812	192,393
March	312,916	103,375	209,541
April	281,339	99,218	182,121
4 mo.	1,150,692	384,322	766,370

Locomotive Shipments Gain In May but Orders Fall

May shipments of steam locomotives to domestic railroads were more than double those of April, but unfilled orders decreased in proportion, according to the department of commerce report for the industry:

	Shipments		Unfilled Orders	
1930	Domestic	Foreign	Domestic	Foreign
May	56	2	367	5
5 mo.	322	10	.....	.....
June	80	1	291	4
July	52	1	243	3
Aug.	68	4	193	1
Sept.	62	.....	136	1
Oct.	48	.....	96	1
Nov.	37	.....	63	1
Dec.	37	1	86	.....
Year	706	17	.....	.....
1931				
Jan.	10	.....	78	1
Feb.	10	.....	85	11
March	5	.....	81	12
April	12	1	69	11
May	26	.....	47	11
5 mo.	63	1	.....	.....

New Officers Head Iron and Steel Engineers Group

LIVELY interest in convention sessions and new equipment designs on exhibition marked the opening of the twenty-seventh annual convention and iron and steel exposition of the Association of Iron and Steel Electrical Engineers at Public Auditorium, Cleveland, continuing June 15-19.

Lubrication, combustion, safety and electrical developments were subjects of outstanding importance on the technical program, while approximately 125 exhibitors occupied space in the large exhibition hall.

J. J. Booth, electrical superintendent, National Tube Co., Gary Ind., was elected president of the association for the coming year. Other elections made at the opening business session included: First vice president, J. D. Donovan, mechanical and electrical superintendent, Republic Steel Corp., Massillon, O.; second vice president, W. E. Miller, Bethlehem Steel Co., Johnstown, Pa.; treasurer, W. H. Burr, electrical superintendent, Lukens Steel Co., Coatesville, Pa.; and secretary, William Jackson, Carnegie Steel Co., Homestead, Pa.

J. H. Van Campen, chief engineer, Republic Steel Corp., Youngstown, O., was elected director-at-large and the following were chosen directors: K. M. Raynor, electrical superintendent, Bethlehem Steel Co., Bethlehem, Pa.; G. R. Carroll, electrical superintendent, Jones & Laughlin Steel Corp., Aliquippa, Pa.; J. H. Wagner, electrical superintendent, Acme Steel Co., Chicago; B. Thele, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; J. F. Hunter, safety engineer, Carnegie Steel Co., Pittsburgh; C. C. Pecu, lubrication engineer, Bethlehem Steel Co., Lackawanna, N. Y.; G. T. Hollett, steam engineer, Illinois Steel Co., South Chicago, Ill.; and J. A. Clauss, chief engineer, Great Lakes Steel Corp., Detroit.

Brawn and flesh availed naught against this product of brain. Four husky workers on a section of Link-Belt conveyor apron failed to deflect it from the horizontal

Russia Plans To Embark In Scrap Industry

Because of metal shortage and lagging of the metal industries in the five-year plan, Soviet Russia is preparing to make as full use as possible of steel and iron scrap. Amtorg Trading Corp., New York, representing the Soviet government in the United States in a commercial way, has asked the advice of Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., in equipping a yard for preparation of the scrap.

It is planned to provide for capacity of 400,000 tons of scrap yearly, larger than any yard in the United States. The equipment is to include shears for cutting sheet and other steel, skull crackers for breaking cast metal, presses for briqueting borings and turnings, cranes and other hoisting equipment.

No Consular Invoice Needed

Washington—Crude minerals, with several other commodities, have been specifically exempted from requirements of consular invoices, according to a new regulation by Secretary Mellon, effective July 1.

The treasury department defines the word minerals as used in the order as follows:

"The term 'minerals' means all inorganic matter occurring naturally, and not advanced by any process of manufacture, and includes crude minerals, oils, ores, earths, and clays.

Industrial Men in the Day's News

J. J. Kennedy, Vice President in Charge of Sales, National Tube Co.

AFTER five years with General Electric Co., Schenectady, N.Y., he was chief clerk for a bank at Albany, N.Y.

NEXT transferring to New York, he became secretary of Credit Managers' association, a department of the United States Steel Corp.

APPOINTED credit manager for National Tube Co. in 1903, he in 1909 became general sales manager, serving in that capacity ever since.

ROUNDING out an affiliation of 30 years with the United States Steel Corp., New York, and its subsidiaries, J. J. Kennedy, who for 22 years past has been general manager of sales, National Tube Co., Pittsburgh, has been promoted to a vice presidency. He will continue also in charge of sales. As noted in STEEL of June 11, Mr. Kennedy in his new office succeeds John H. Nicholson, retired.

While his earlier activities were along credit lines, Mr. Kennedy's business career has been identified largely with sales work. He was born in Albany, N. Y., and after receiving his education he moved to Schenectady, N. Y., where in 1896 he was employed by General Electric Co., and where he remained for about five years. In 1901 he returned to Albany to become chief clerk for the New York State National bank. After a brief period in the bank he removed to New York, where he entered the employ of the United States Steel Corp. in 1901 as secretary of the Credit Managers' association, where he obtained considerable knowledge of credit methods.

His experience in this work fitted him for enlarged duties at Pittsburgh and his transfer there took place in 1903, when he was appointed credit manager for National Tube Co. After six years he was made general manager of sales and he has continued in that capacity until his recent promotion to the vice presidency.

HARRY T. GILBERT, formerly vice president in charge of sales for the Republic Steel Corp. at Youngstown, O., and recently special assistant to the president, with offices at Cleveland, resigned last week. Prior to going with Republic in 1928, Mr. Gilbert had been associated with the Sharon Steel Hoop Co., Sharon, Pa., being vice president at the time of his resignation. For the present, Mr. Gilbert will like a vacation.

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James A. Ireland has been appointed central district sales manager for Steel & Tubes Inc., Cleveland, of which William J. Sampson Jr. is president. Mr. Ireland will be assisted by J. J. I. Jamieson and J. A. Upstill.

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C. L. Saunders resigned recently as general advertising manager and purchasing agent of Morse Chain Co., Ithaca, N. Y., recently merged with Borg-Warner Corp., Chicago, after an affiliation of more than 14 years. During that interval he has had charge of all company advertising and publicity. Prior to his association with the Morse company, he was for ten years consulting engineer and general contractor at Cleveland. He served National Carbon Co., Cleveland, as consulting and research engineer for seven years.

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William H. Rohrbach has been appointed purchasing agent of the Motor Accessories Co., Allentown, Pa. Louis E. Krieg and Harold Plusch have been made field salesmen.

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Daniel M. Sachs, formerly vice president and general manager of Northern Pipe Line Co., Binghamton, N. Y., has been elected president of National Transit Co., National Transit Pump & Machine Co., and Maryland Pipe Line Co., Oil City, Pa. He succeeds the late L. E. Lockwood.

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H. P. Anderson, identified with Standard Stoker Co., Erie, Pa., has been appointed chief engineer in charge of all engineering inspecting, testing and development activities of the company. He will have offices in Erie and New York.

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Daniel E. Weedon has been appointed treasurer and general manager of Russell Mfg. Co., Middletown, Conn., to succeed William C. Fisher who retired June 1 after 50 years service. Mr. Fisher becomes vice president in an advisory capacity.

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F. F. Eillott has been appointed mill and foundry general superintendent of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

H. F. Seifert has been appointed

superintendent of the brass foundry and copper mill.

C. R. Stevens has been named purchasing engineer of the purchasing department.

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H. G. Chase was recently appointed sales manager of Standard Alloy Co., Cleveland. He formerly was identified with General Alloys Corp., Boston.

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Harold J. Payne, who for the past year has been asistant managing director of Associated Business Papers Inc., New York, was recently made secretary.

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E. B. Cleborne, of the Wallingford Steel Co., Wallingford, Conn., was recently made president of the Sales Managers' Association of Connecticut.

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Pierre F. M. Aubert, of Aubert & Duval Freres, Paris, is visiting the United States and is making his headquarters with the Nitralloy Corp., 52 Broadway, New York.

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John F. Miller, vice chairman of the board of directors, Westinghouse Air Brake Co., Wilmerding, Pa. has been elected director and chairman of the board of the Bank of Pittsburgh.

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Dr. Edouard Houdremont, chief superintendent of the Krupp works at Essen, Germany, is visiting the United States and is making his headquarters at the offices of the Krupp Nirosta Co. Inc., 230 Park avenue, New York.

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George G. Crawford, president, Jones & Laughlin Steel Corp., Pittsburgh, on June 8 was awarded a doctor of science degree by Georgia School of Technology. He was graduated from that institution in 1890 with a bachelor of science degree in mechanical engineering.

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Frank K. Billett, identified with Toledo Scale Co., Toledo, O., for more than ten years, for the last eight of which he has been head of the cost accounting department, has been appointed secretary. He became connected with the company in 1920 as enameling room clerk.

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George W. Nelson, formerly assistant superintendent of the Clinton, Mass., plant of Wickwire Spencer Steel Co., New York, and Worcester, Mass., has been appointed superintendent to succeed Francis N. Woodman, who has resigned after filling that office for the past four years.

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R. A. Dadisman, supervisor of general advertising for American Rolling Mill Co., Middletown, O., has been elected chairman of the Cincinnati Association of Industrial Marketers.

Fred G. Berling, of the Lunkenheimer Co., Cincinnati, was re-elected vice president, and W. J. Hengehold, of Lodge & Shipley Machine Tool Co., Cincinnati, was made secretary-treasurer.

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Charles E. Gross, recently general superintendent of the South Side works of A. M. Byers Co., Pittsburgh, has been appointed general superintendent of the new plant of this company at Ambridge, Pa. Mr. Gross has been succeeded at the Pittsburgh plant by Amos Kamerer, formerly pipe mill superintendent.

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Morris Taylor, Lincoln Electric Co., Cleveland, will sail soon for Japan to confer with officials of the Japanese government on problems in connection with all-welded construction of battleships for the Imperial Japanese navy. He also will lend technical assistance in the welding of a steel pipe line being fabricated by Kawasaki & Co., Tokio, for the city water works

Philip S. Rinaldo

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L. M. Crosby, Dail Steel Products Co., Lansing, Mich., Walter H. Wenzel, Vilter Mfg. Co., Milwaukee, and H. E. Pape, American Tube & Stamping Works, Bridgeport, Conn., were made district vice presidents of the National Association of Purchasing Agents at the recent annual meeting at Toronto, Ont.

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W. J. Parker has been appointed commissioner of the Forging Manufacturers association to succeed G. H. Weiler. The association has moved into new offices located at 7 East Forty-fourth street, New York. Mr. Parker previously has been commissioner of several other associations, including National Battery Manufacturers association, Asbestos Brake Lining association, and Chemical Fire Extinguisher association. He retains the direction of these organizations.

Obituaries

THOMAS L. CANNON, 47, for 25 years identified with the steel fabricating business as manager of the Carnegie, Rankin and Leetsdale, Pa., works of McClintic-Marshall Co., Pittsburgh, now McClintic-Marshall Corp., Bethlehem, Pa., died in Pittsburgh, June 11. At the time of his death he was Pittsburgh manager of the McClintic-Marshall Corp. Mr. Cannon was graduated from Lehigh university and spent one year with the Gerber Engineering Co., Bethlehem, before becoming associated with McClintic-Marshall.

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Henry Wells Kip, 84, formerly head of a hammer manufacturer in Buffalo, died recently. He retired ten years ago.

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John A. Howard, 59, for many years chief engineer of American Radiator Co., Buffalo, died there last week.

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John L. Garis, 40, office manager of Reading Screw Co., Norristown, Pa., died June 3. He had been with the Reading company 13 years.

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Frank E. Stevens, 69, president and founder in 1909 of Lattimer-Stevens Co., Columbus, O., manufacturer of gas appliances, died June 13.

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Robert S. Carter, president of Latrobe Tool Co., Latrobe, Pa., died May 17. He also was president of J. M. Carpenter Tap & Die Co., Pawtucket, R. I. He was elected president of the Latrobe Tool Co. in 1924, having previously been identified with Whitman & Barnes Mfg. Co., Akron, O.

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John Oliver Henshaw, 74, who for about six years has been representing several pig iron producers in New England, died at Cambridge, Mass., June 7. He formerly was with Boston Bridge Works Inc., then with N. S. Bartlett & Co., and later with Hickman, Williams & Co., Inc., Boston.

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Philip S. Rinaldo, of Wheaton, Ill., 54, president of Flexible Steel Lacing Co., Chicago, died May 30. He was one of the founders of the company and served as its secretary-treasurer from the beginning, later being made general manager. He was elected president in February, 1931, to succeed the late G. E. Purple.

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Eben Perkins, 72, president of Perkins Co. Inc., Taunton, Mass., died May 25 at Fall River, Mass. He was the inventor of the cold forge process for the manufacture of horse shoe nails. At one time he was general manager of Maritime Nail Co., and Portland Rolling Mills, St. John's N. B., and later was with Hoopeston Horse Nail Co., Hoopeston, Ill. When

(*Concluded on Page* 99)

Here and There in Industry

NORTON CO., Worcester, Mass., and Behr-Manning Co., Troy, N. Y., have been consolidated, with the Norton Co. altering its capital structure to act as a holding company for both. The two will continue to operate under their present names and with management unchanged. The Norton Co. at Worcester manufactures abrasive wheels, grinding machines, refractories and nonslip floors. It has plants elsewhere for preparation of abrasives for further manufacture into wheels and foreign plants for the manufacture of wheels at Hamilton, Ont., Wesseling, Germany, Paris, France, and Welwyn, Garden City, England. The Behr-Manning Corp. manufactures abrasive-coated paper and cloth, with offices and plant at Troy. Officers will not be changed but directors will be shifted to interchange interests. Capitalization will consist of 2,300,000 shares of $10 par value. Products of the two concerns are not competitive but are complementary and the combined lines will cover the entire abrasive field.

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Mitsui & Co. Ltd., 65 Broadway and 180 Madison avenue, New York, has moved its offices to the Empire State building, 350 Fifth avenue.

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Kerlow Steel Flooring Co., Jersey City, N. J., has appointed Walter S. Keith, 1318½ Second avenue, Seattle, its sales representative for Washington and Idaho.

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Ferro Enamel Corp., Cleveland, has taken an order for installation of a continuous porcelain enameling furnace for the Walker Pratt Mfg. Co., Watertown, Mass., manufacturer of ranges. It will be electrically heated and will increase production.

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Poor & Co., Railway Exchange building, Chicago, railway supplies, reached its silver anniversary June 6. It was known as the P. & M. Co. previous to its change to the present name, the same management being in effect the entire 25 years.

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Wire Rope Mfg. Equipment Co., Seattle, subsidiary of the Puget Sound Machinery Depot, 322 First avenue South, suffered damage by fire that practically destroyed the plant, completed stock and equipment. Rebuilding is planned, probably with a steel structure. The machinery, of special design, will be replaced by equipment made in the company's own plant. The machine shop escaped serious damage.

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Robbins & Myers Inc., hoist and crane division, Springfield, O., has appointed Dravo-Doyle Co., merchant engineer, Dravo building, Pittsburgh, its exclusive representative for sale of its hand and electric hoists, cranes and trolleys in Pittsburgh territory.

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Monarch Machine Tool Co., Sidney, O., has opened a branch office and showroom at 547 West Washington boulevard, Chicago, in charge of Martin J. Luther. Various lathes from the company's line will be on exhibition and lathe service will be available from this office.

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Simplex Tool Co., Woonsocket, R. I., has been placed in the hands of Frederick E. Starrett as permanent receiver by court action. The plant will be continued in operation to complete contracts as far as possible and the assets will be converted into cash for the benefit of creditors.

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Youngstown Sheet & Tube Co., Youngstown, O., has placed an order with H. A. Brassert & Co., Chicago, for a 40,000-cubic feet per minute disintegrator and a zoned high-efficiency hot blast stove of octagonal tile with graduated inserts, for Campbell works, Campbell, O.

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Northern Equipment Co., Erie, Pa., has appointed Joseph Eshelman, Webb-Crawford building, Birmingham, Ala., its representative in eastern Tennessee for sale of feed water regulators, pump governors, differential valves and allied equipment. This is in addition to territory formerly served by Mr. Eshelman.

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City Auto Stamping Co. is to be formed by merger of the City Machine & Tool Co. and City Auto Stamping Co., both of Toledo, O., on approval of stockholders of both companies at special meetings called for June 24. Directors of both companies have approved the merger. The plan contemplates making the merger effective July 1. Stock is to be exchanged share for share.

□ □ □

Askania Corp., Berlin, Germany, has opened an American branch at 1603 South Michigan avenue, Chicago. Sales are being handled in this country by H. A. Brassert & Co., 310 South Michigan avenue. The company manufactures automatic pressure regulators for mixing and controlling fuels and flow of gases, indicating and recording meters and geophysical instruments.

□ □ □

Joseph T. Ryerson & Son Inc., Chicago, in 1924 bought the interest of W. J. Reed and others in the Reed-Smith Co., Milwaukee, and now has bought the remaining stock, the business becoming the Reed-Smith plant of Joseph T. Ryerson & Son of Wisconsin Inc. The Reed-Smith Co. has been an important factor of steel warehouse service in Milwaukee and its strength adds to the completeness of coverage by the Ryerson organization.

□ □ □

Hill Clutch Machine & Foundry Co., Cleveland, has absorbed the Cleveland Knife & Forge Co., and production of the latter will be moved to the plant of the former. Both names will be continued for the present. Ralph Perkins, president of the Hill Clutch company, will be president of the consolidated concern, and A. C. McDaniel, president of the Cleveland Knife company, will be vice president and general manager. H. S. Donaldson will be vice president, John R. Short, secretary, and M. G. Firestone, treasurer. The merger is effective as of July 1.

□ □ □

Armstrong Cork Co., Lancaster, Pa., is to consolidate all its Boston branch sales offices and warehouses, the new office to be at 286 Congress street. Sales divisions thus brought into one office are: Armstrong Cork Co., floor division, 507 Bedford building; Armstrong Cork & Insulation Co., insulation division, 275 Congress street; Armstrong Cork & Insulation Co., cork division, 84 North street; Armstrong Cork Products Co., shoe products section, 197 South street. Temlock dealer sales division of the Armstrong Cork & Insulation Co., recently organized, will be located at the new address.

Encouraging Indications In the Business News

OHMER FARE REGISTER CO., Dayton, O., reports that its sales of cash registers the first five months of 1931 have been more than double those of the first five months of 1930, and that night operations have been necessary to meet orders of its recording instrument division.

□ □ □

Segal Lock & Hardware Co. has restored its Brooklyn, N. Y., plant to a 24-hour basis on account of demand for razors and blades.

MIRRORS of MOTORDOM

DETROIT

AFTER eight, twelve and sixteen cylinders, front wheel drive, free wheeling, syncro-mesh and silent second transmissions, restyling of radiator shells, streamlining of bodies—what?

Probably not much, the remainder of 1931. For one thing, the program of the National Automobile Chamber of Commerce to concentrate model changes at or just prior to the January shows is taking hold.

Except for a few manufacturers who assented to this program with a reservation for 1931, the industry as a whole will go through this year with only the minor changes which always are in process. To this Ford, of course, is an exception.

Whether many changes in models will be offered at the January, 1932, shows will depend in some measure upon the business outlook as gaged in the last quarter of this year, but a good many manufacturers believe they have not exhausted the market potentialities of the advances they made this year and last, such as eight-cylinder motors and free wheeling.

May Hold Back Advances

This conviction that there is unspent capital in the changes of the past two years, plus the desirability of minimizing cash outlays for model changes, may tend to make the fashion and mechanical parade at the January, 1932, shows subdued.

Obviously the business situation has necessitated curtailed expenditures, and research laboratories have been no exception, but the search for "new stuff" has not wholly been abandoned. Since many developments are in the test tube and on the proving ground several years before their adoption, cessation of research threatens stagnation ahead.

To cite only a few manufacturers who are looking ahead, Packard, once builder of a "twin six," has been experimenting with a V-twelve. Willys-Overland and Buick have been doing experimental work on twelves.

Oldsmobile is understood to have an eight ready. Those who discerned under the hood of the final Chevrolet four series sufficient room and strength for a six, now believe the current Chevrolet six could take an eight-cylinder motor.

This is not to say, of course, that these changes will be adopted next year, or ever, for only a fraction of the ideas considered in the laboratory reach the assembly line, but it shows that automobile manufacturers are keeping their powder dry.

Ford Laboratories Ready

In its denials the past six months of reports of forthcoming model changes, the Ford Motor Co. has never taken the position that its Dearborn laboratories are not ready with new motors. It is the personal decision of Henry Ford that will determine the time and type of new models. A good many of the changes being considered by manufacturers in the $1000 class hinge upon what Ford may do.

Not a little effort, experimentally, appears to have been spent recently on rear engine design. Several manufacturers in Europe commercially are manufacturing models with the power plant mounted adjacent to the rear axle, the best engineering opinion preferring a V to a straight line type of motor for this purpose.

An advantage cited for this type of design is that it affords a better balance of weight and hence smoother riding qualities. Thus far the European cars of this design have generally retained the hood and otherwise continued current body lines. There was talk recently in Detroit of an American car of this design, to be called the Steckenberg. Some of the very first cars in the United States, over 30 years ago, had their power plants close to the rear axle.

Speculation concerning the plans of General Motors for its various lines in 1932 is likely to increase as this year wears on. Chevrolet's plans obviously must take into consideration developments in the price field just above it. Several times Chevrolet has awaited Ford's program, then has topped it.

Oldsmobile was expected at the shows last January to replace its Viking eight with a smaller eight, but went into the 1931 market with only its six. Now it is again reported that Oldsmobile has an eight ready, waiting perhaps a clarification of the market in the $1000 class. Incidentally, the introduction of new sixes by Graham and Reo a month ago indicates a conviction that the trend is not entirely to the eights.

Buick and Oakland-Pontiac have been performing well, considering the business situation. Concerning Cadillac-LaSalle, however, speculation is increasing and many believe that the tendency is toward making the Cadillac twelve the keystone of this line.

Sixteen a Special Job

Cadillac's sixteen is no longer a production job—if it ever could be termed that in the light of what Detroit considers production. It is being made on specific order only. At Cleveland the inventory of the sixteen model is heavy.

The Buick eight, apparently, is reaching up into the precincts in which LaSalle eight has enjoyed a good market. The experience of General Motors "companion cars" has not been particularly happy. Buick jettisoned its Marquette and Oldsmobile its Viking; now there are re-

(Concluded on Page 99)

EDITORIAL

Will Higher Freight Rates Halt Price Decline?

COMING at a time when reductions in costs are the order of the day, the petition by the railroads to the interstate commerce commission for a 15 per cent increase in freight rates at first glance will appear incongruous to many shippers. The cost of transportation is considered high in relation to costs for comparable services in other lines of activity. Moreover, freight rates still are inflated when compared with the prices of certain commodities. For instance, when the average per-ton-mile freight rate and STEEL'S composite of steel and iron prices are plotted—assuming 1913 values to equal 100—it is found that today the composite is 30 points below freight rates. The composite index has been below freight rates since 1924 and has been moving downward, with the exception of 1929, while freight tariffs have been stabilized at a uniform level.

Therefore, in the face of statistics it would appear that the cost of transportation should be reduced instead of increased. Unfortunately, however, the situation embraces many complications which make it impossible to deal with freight rates as one would deal with commodity prices.

Unlike manufacturing enterprises the railroads operate under strict government regulation. Many steps taken by industrial companies to effect economies in operation are forbidden the railroads because of this government control. A manufacturer can shut down or dismantle a plant if it proves unprofitable, but a railroad cannot abandon a money-losing branch line unless it can obtain federal and sometimes state approval.

Profits Reduced, Despite Efforts To Increase Operating Efficiency

Many of the class I roads have performed wonders in recent years in increasing the efficiency of operations. But these efforts have been limited largely to internal operations, such as application of motive power, train movements, etc. The restrictions of government regulation have barred them from the economies which would result from elimination of duplicated services and abandonment of lines which are not necessary or profitable. Much of the waste resulting from these sources probably will be wiped out eventually when the roads are permitted to consolidate. However, consolidation plans move slowly and years may pass before relief from this quarter can be expected.

In the meantime, in spite of everything the railroads have done to reduce costs and to stimulate traffic, their profits have dropped to the danger point. They claim that if relief is not forthcoming soon, their ability to serve the shippers of the country will be seriously impaired. The question of the wages of railroad workers also is involved.

Therefore, the American public, which pays the transportation bill, is faced with two alternatives. If the increased rates are refused the roads will continue to neglect their equipment, their buying power will remain impaired, service will grow worse instead of better, their 1,660,920 employes probably will be obliged to take wage cuts, the investing public will suffer and the nation's transportation problem will become more demoralized than at present.

Adequate Railroad Transportation System Important to Public

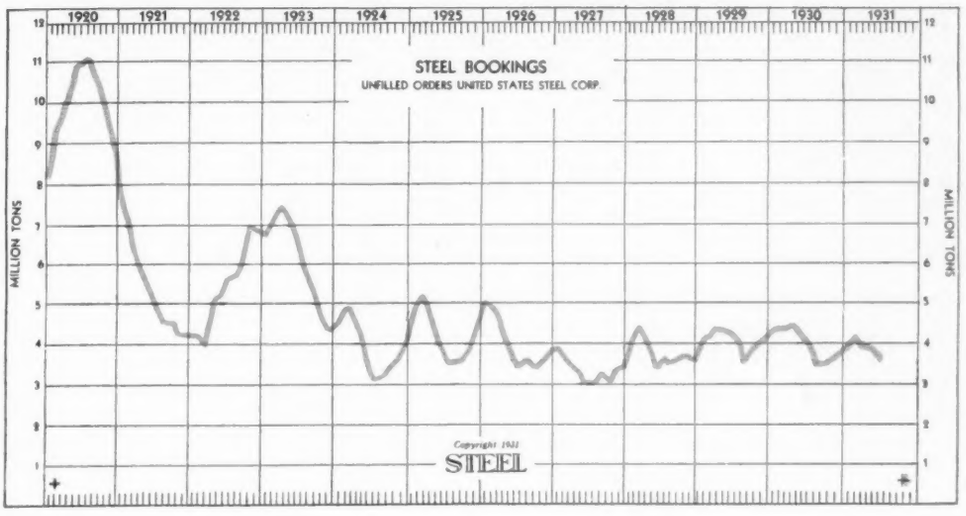
On the other hand, if the increase is granted, the railroads will be in a position to keep up their properties, to better satisfy the interests of their employes and investors and to approach the big task of consolidation with greater courage.

Industry's interest in these two alternatives is closely parallel to that of the public. The well being of the transportation system is important to a balanced economic situation. The railroads are normally good customers of the steel industry and steel producers would welcome a resumption of railroad orders, but it should be remembered that the steel industry pays far more in transportation tolls than it receives from the roads for steel and steel products. The proposed increase in rates means an addition of from $50,000,000 to $75,000,000 or more to steel's annual freight bill.

But there is an additional factor in the situation which is uppermost in the minds of industrial leaders. It is the question of the influence of increased rates on commodity prices. Will the higher freight tariffs and the resulting higher prices of steel and other commodities help to turn the tide of descending prices?

If industry could be certain that the proposed rates—injected into business at a time when prices are bouncing off bottom—are the serum that will put the patient on the path of recovery, then the increased freight bill would be cheap at half the price.

THE BUSINESS TREND



1930

May	4,059
April	4,354
March	4,570
Feb.	4,479
Jan.	4,469

1929

Dec.	4,417

1931

May	3,620
April	3,897
March	3,995
Feb.	3,965
Jan.	4,132

1930

Dec.	3,943

Industry's House Cleaning Is Favorable Sign

ONE of the favorable aspects of the present business situation is the steady growth of sober reasoning by virtue of which industrial executives are ceasing to wait for better times and are getting down to brass tacks, determined to take things as they find them and make the best of it. Many who thought it practically impossible to make a showing in the face of present prices have been surprised to find how much they could reduce the cost of operations through energetic house cleaning. The waist-line of industry, swelled to ample proportions during the easy days of 1928 and 1929, now is undergoing a strenuous treatment for reduction. At the present rate it will be down to fighting trim soon.

Business Watches Attempt of Railroads To Win Higher Freight Rates

During the past week the efforts of the railroads to win an increase in freight rates took more definite form. Thus far relatively little objection to the proposed increase has been aired. On the other hand, financial and labor interests seem to favor the move. The fact that railroad securities are so widely held makes it certain that life insurance companies, banks and other investors will support the higher rates. It goes without saying that the railroad brotherhoods will welcome an increased tariff inasmuch as it is the only thing in sight which offers any hope of staving off wage reductions.

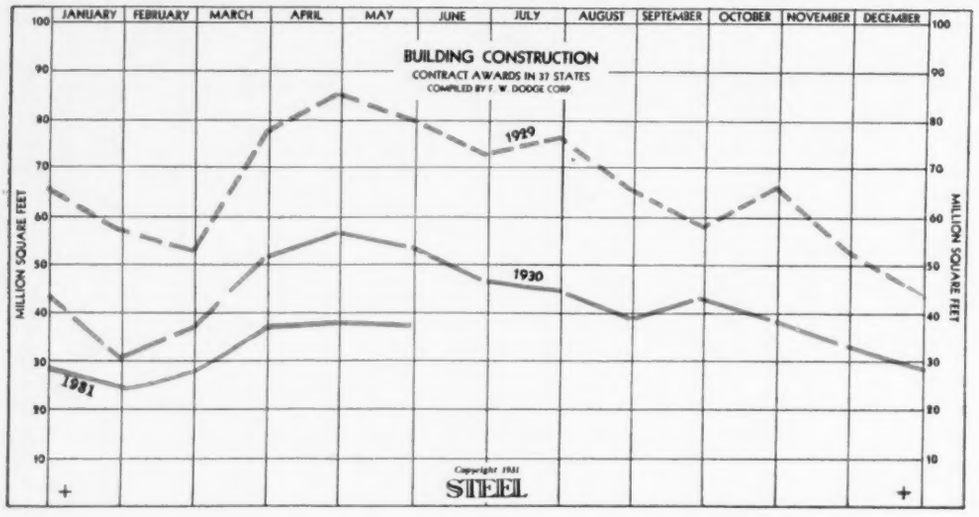
Industry's voice has not been heard on the freight rate question, but it is likely that approval will outweigh objection. The majority of manufacturers would welcome the advent of a legitimate excuse for halting the downward slide of prices. If it appears that a rise in the cost of shipping freight will help us to stabilize prices, then industrial shippers undoubtedly will be for it.

Barometers of Production Continue To Slip Gently To Lower Levels

The trend of business has not changed during the week. Steel operations are continuing to ease off gently, the rate last week breaking through the 40 per cent level. Automobile production, which held up well throughout May, in the first week of June was about 12 per cent below that of the preceding week. Car loadings in the week ending May 30 were down sharply, thus bringing to a close a month's record of disappointing volume.

Unfilled orders of the United States Steel Corp. were reduced sharply, according to expectation. However, the drop from April 30 to May 31 was less than in the corresponding period last year. The May 31, 1931, total was 3,620,452 tons, representing a loss of 277,277 tons, while last year the total at the end of May was 4,059,277 tons, a decline of 294,993. The average decline in May for the past seven years is 353,420 tons.

Commodity price indexes are still declining, but there are signs of greater resistance in certain products. The past week witnessed recoveries in the prices of zinc and tin and greater firmness in lead and copper. STEEL's composite of steel and iron prices remained unchanged at $31.03, after a rather sharp decline in the previous week.



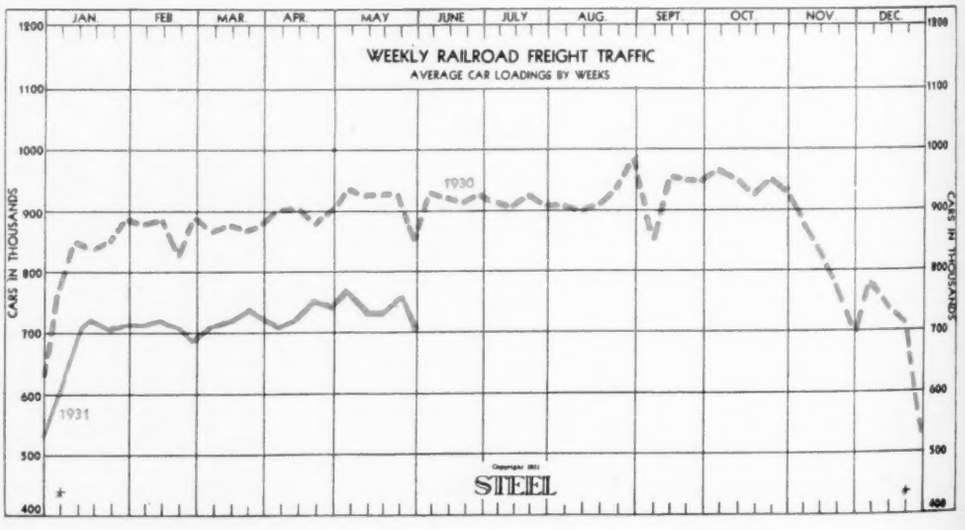
	Square Feet
May, 1931	38,940,800
April, 1931	39,380,300
May, 1930	53,730,000

Decline In Building Awards Is Moderate; Industrial Construction Up 4 Per Cent

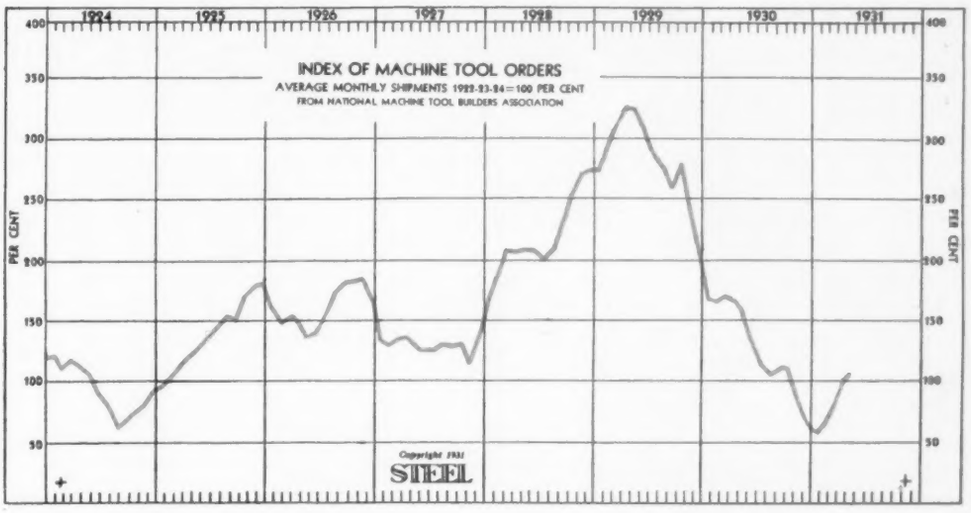
Building construction suffered only a slight decrease in May, amounting to 1.1 per cent in terms of area involved in contracts awarded. F. W. Dodge Corp. reports contracts for 38,940,800 square feet compared with 39,380,300 square feet in April. Residential building fell back from 22,632,700 to 21,911,100 square feet, a drop of 3.2 per cent. Construction in the industrial class gained appreciably from 2,463,500 to 2,574,000 square feet, a betterment of 4.5 per cent. Seasonal expansion in residence construction and in total construction was from February to April, inclusive. Industrial awards started upward in March and carried over a month longer.

Holiday Decline in Freight Car Loadings Is Slightly Less than Seasonal

The expected decline in freight car loadings for the week ended May 30 was scarcely as great in proportion as in the weeks of 1930 and 1929 containing the same holiday. The week's total, 710,934 cars, compares with 755,071 in the preceding week and represents a drop of 149,130 cars from the 1930 week and 261,891 cars from the 1929 week. In the previous week losses of 174,525 and 307,017 cars occurred, in comparison with the same periods of 1930 and 1929. For the first five months of the present year freight traffic amounted to 15,988,235 cars. Large week-by-week declines from last year bring the five-month total considerably under that of 1930, when 19,481,964 cars were loaded.



	1931	1930
May 30	710,934	860,064
May 23	755,071	929,596
May 16	747,732	928,757
May 9	749,449	932,378
May 2	775,291	943,674



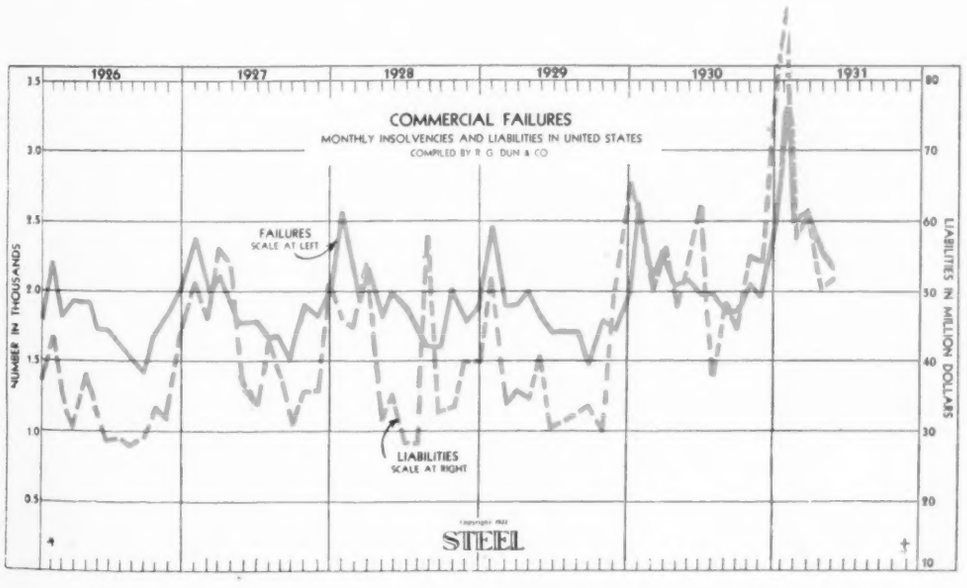
	1931	1930
May	103.3	165.1
April	102.1	176.8
March	89.4	177.8
February	73.1	172.8
January	65.3	175.4
	1930	**1929**
December	73.1	222.1

Moving Average Makes Slight Gain as Machine Tool Orders Slacken

May orders for machine tools tapered off with a further slight reduction, but the three months' moving average gained a point on the strength of the March showing. The moving figure advanced from 102.1 to 103.3, comparisons with a year ago showing that a drop from 176.8 to 165.1 took place at that time. Actual orders for all classes had their second successive drop in May, reaching 87.2 from 105.1. The larger companies experienced a recession in actual orders but a slight gain in the three months' index; the companies of middle size lost ground in both cases, and the smaller companies established minor gains both in actual orders and three months' average orders.

Failures Decline in Number; Liabilities Are Less Than Year Ago

The mortality rate among commercial enterprises dropped sharply in April, slightly more than might be expected in an ordinary seasonal movement. In numbers, insolvencies were 2248, compared with 2386 in the previous month. The rate still was above that for a year ago, however, as May failures in 1930 were 2179. Liabilities of the defaulting companies, while slightly higher than those of the preceding month, amounted to only $53,371,212 compared with $55,541,462 a year ago. In relation to April, the smaller number of failures in the past month and the larger total of liabilities indicates a greater predominance of large companies, on the average.

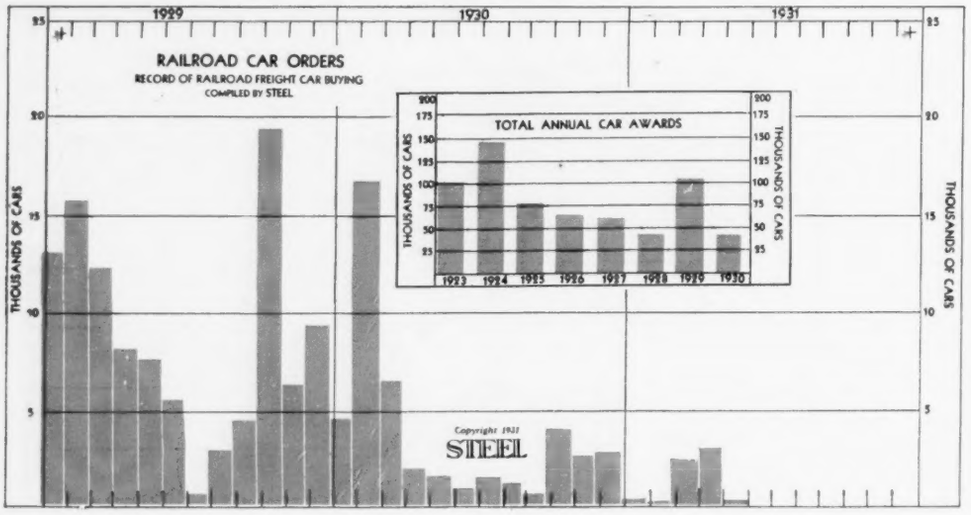


Liabilities

May, 1931	$53,371,212
April, 1931	50,868,135
May, 1930	55,541,462

Number

May, 1931	2,248
April, 1931	2,386
May, 1930	2,179



	1931	1930
May	20	1,392
April	2,798	1,997
March	2,166	6,118
February	50	17,027
January	100	5,072

	1930	1929
December	2,729	9,710
November	2,621	6,361

Railroad Car Orders Establish New Low Record with 20 Cars Placed

Car builders received orders for only 20 cars in May, a new low since figures on car orders have been compiled. A year ago 1392 cars were placed and in 1929 there were 7562 cars placed during May. The previous low was in February, with a total of 50, the second month usually being at or near the high point of the year. Single orders furnished the major portions of the buying in March and April, the only two months thus far in 1931 in which buying of consequence has occurred. The total for five months of 1931 is 5134 cars, slightly above the awards of the single month of January, 1930, and only a fraction of the 1930 total for the first five months, 31,606 cars.

Cut in Shipments Pushes Copper Stocks To New High during May

Refined copper stocks mounted to a new high at the end of May as shipments took another sharp drop and production changed only slightly. Stocks increased 30,746 tons to reach 398,667 tons, the rate of gain being the greatest for any month since April, 1930. Output of 102,695 tons was at about the figure for April, the daily average dropping slightly. Output in May, 1930, was 132,183 tons. Shipments, which declined from 111,482 to 86,785 tons in April, again decreased markedly to 71,949 tons. Daily average shipments, 2321 tons, were at a new low and compare unfavorably with the 4028 tons average for May a year ago, which was the high point of 1930 shipments.

Stocks

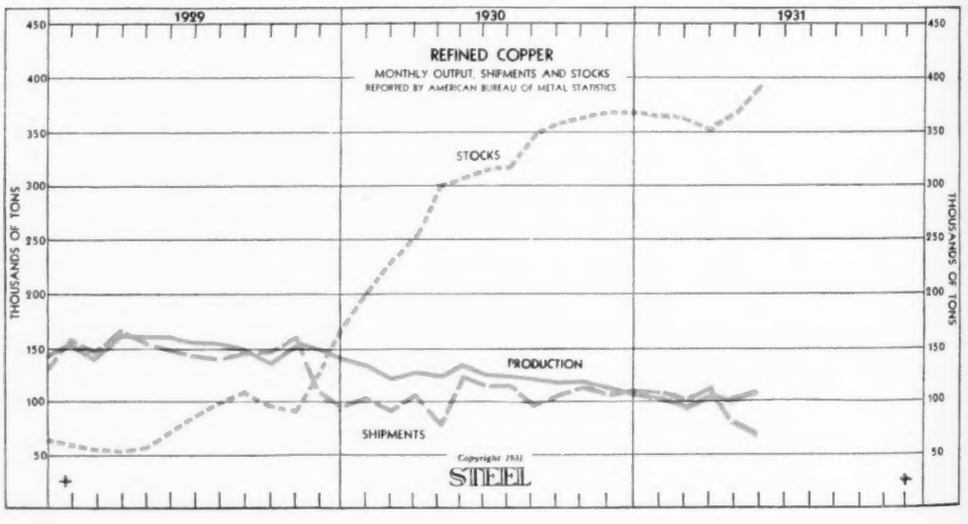
	Tons
May, 1931	398,667
April, 1931	367,921
May, 1930	308,646

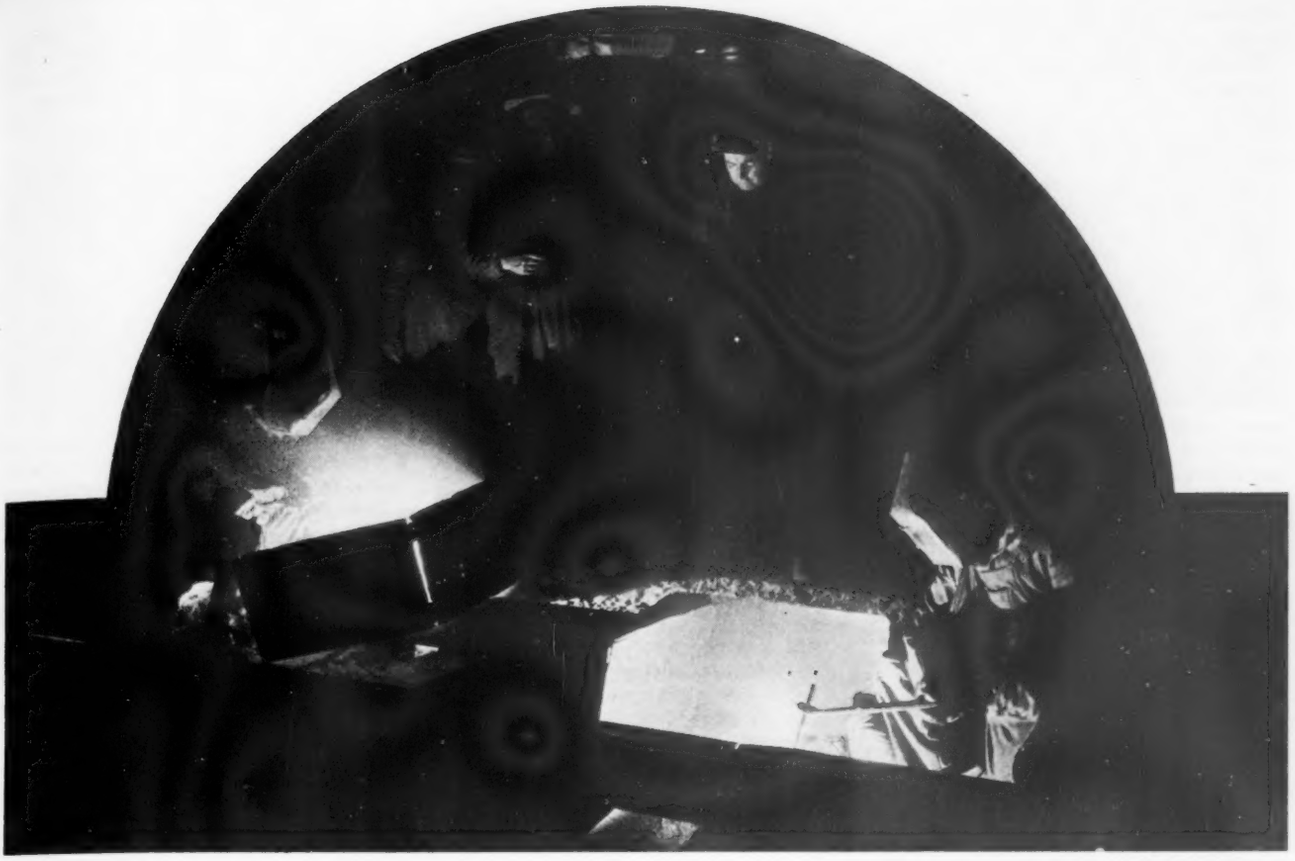
Production

May, 1931	102,695
April, 1931	100,501
May, 1930	132,183

Shipments

May, 1931	71,949
April, 1931	86,785
May, 1930	124,875





Study in lights and shadows—applying a welded-on overlay to worn street railway tracks at night

Status of the Welded-on Overlay

BY MILES CATLIN SMITH
Mechanical Engineer, Los Angeles

JUDGING from some eight years of experience and more or less mediocre success, the prospects of a much broader adoption of the welded-on overlay in the future would appear to be none too bright. However, experiences so far have brought to light many interesting facts and have opened up avenues for an entirely new series of experiments which should result in the further establishment of this relatively new process. It is the belief of this writer that the welded-on overlay of the future, aside from the basic method of application, will have little in common with the admittedly crude method of today.

Up to and including the time that the welded-on overlay or, as first designated, hardfacing, was utilized only on oil-field drilling tools and certain types of excavating equipment, there was little apparent necessity for other materials than those available and the overlays functioned sufficiently well in the applications for which they were utilized. It was only with their attempted application to a broader field that both the materials used and the process of applying rightfully became classified as crude attempts to put a theory into practice. Theoretically, the idea was recognized as a sound one, yet its success was, to say the most, mediocre.

To desposit a stratum of metal over a given surface by utilizing that metal as the welding electrode of an electric welding arc or as a welding rod that is melted down with the heat of the oxyacetylene torch doesn't sound like an unusually difficult operation. Electric arc and oxyacetylene torch welds are made successfully and it would seem that the welding on of a metallic outersurface would be equally simple; yet such has proved by no means to be the case. Though most failures have been due more to the materials used than to the application methods employed, the deposition of an overlay by the present developed procedure is an intricate smelting operation through which many metallic elements and alloys cannot pass

unharmed, as conclusive tests have shown.

Since the original idea of this hardfacing was to acquire a wear resistant surface with little if any thought to the absolute solidity of the deposited stratum, the first materials used were those which could be deposited to form a hard, reasonably smooth and fairly solid body of metal. Hair-line cracks, surface checks or minute gas pockets were far from desirable, yet their presence did not mean necessarily that the overlay would not function sufficiently well in its application to oil-field drilling tools or certain types of excavating equipment. However, such defects did hamper the utilization of the overlay in many applications for which it should be suitable otherwise. These failures subsequently led to research which has divulged some most interesting data upon which the welded-on overlay of the future no doubt will be determined.

Electrode Analysis a Factor

As a result of this research the electric arc method of depositing an overlay was found to involve many phenomena which had, up to this time, been receiving little if any consideration during the development of electric arc welding as a process for joining iron or steel. As long as the electrodes used in electric arc welding are composed of steel relatively low in carbon content or even so called high-carbon steel the usual procedures suffice, but when electrodes are used which consists of more or less complicated alloys and when the deposits formed by the operation must possess certain definite properties it has been proved conclusively that both the electric arc itself and the metal used as an electrode are subject to many damaging influences.

Oxidation always has been a factor in every type of welding. It also has been a recognized fact that the oxygen of the atmosphere has every opportunity to and actually does attack the molten metal during an electric arc welding operation. Furthermore, the formation of metallic oxide, either in the body of a weld or in the area of a weld, is least desired and is often responsible for the failure of the weld. Likewise, in the application of a welded on overlay the formation of metallic oxides is a source of trouble and quite often sponsors complete or partial failure of the operation.

One of the first hardfaced oil-field drilling bits. The parent and overlay metals are easily distinguishable

Atmospheric nitrogen, however, seldom has been considered as either an aid to or hindrance to the electric arc welding operation. Recent experiments have indicated that atmospheric nitrogen has influenced greatly the success and failure of welded-on overlays and must be taken into consideration fully as much as atmospheric oxygen.

Primarily, the deposition of an overlay consists in the pouring of a casting which in its formation interalloys with or amalgamates with the surface of the metal to which it is applied. Furthermore, the casting, after it has cooled thoroughly, must possess certain chemical and physical characteristics. In its formation this casting which is poured while being subjected to temperatures far in excess of its normal fusing point must acquire the desired crystalline structure to possess the required physical properties even though no opportunity avails itself to assist in this crystalline formation through other influences than those actually present in the welding operation. Consequently, the procedure must be such as to exclude all damaging influences and assist the refining influences. Exactly how complicated all of this becomes is best illustrated through a series of experiments outlining the steps taken and the results obtained.

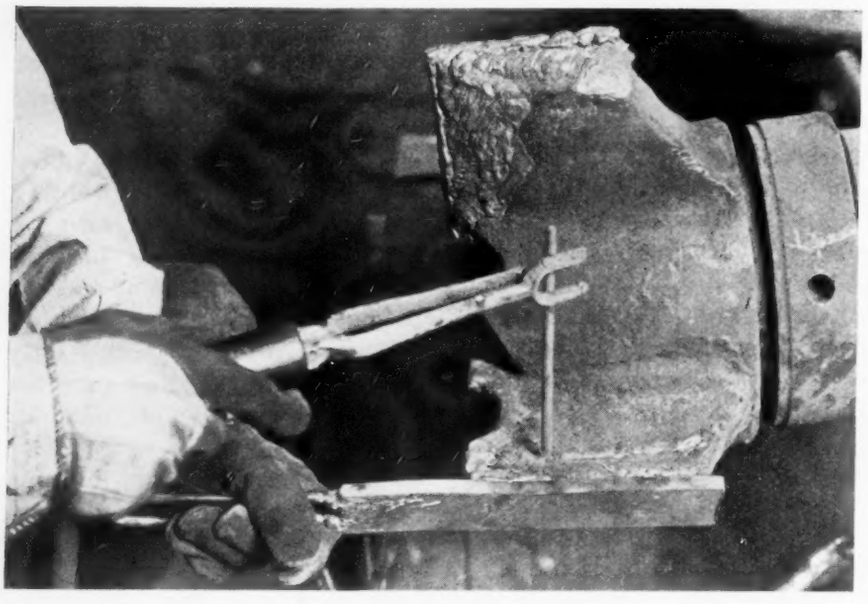
Special Alloy Used

An alloy of iron, chromium, silicon, zirconium, carbon, manganese, sulphur and phosphorus which has won considerable recognition as a hardfacing or overlay material was used as the positive electrode of an electric welding arc, and was deposited to the surface of a plate of mild steel which at the start of the operation was at room temperature. After an overlay of approximately 3/16-inch in thickness and considerable width was built up the mild steel plate and its overlay were fractured and the structures at various points in the section were studied under the microscope.

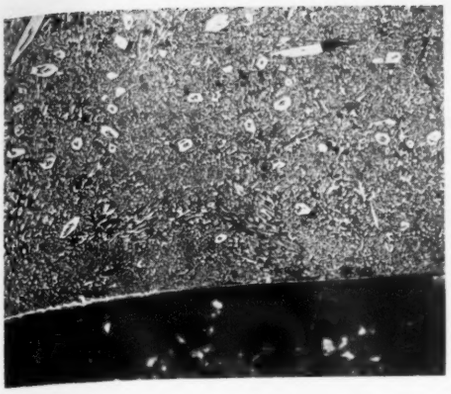
Since it is principally the overlay which is of interest it will be chiefly the overlay which will be described. The mild steel or parent metal showed no signs of change in structure aside from the formation of a slightly overheated area adjacent to the line of juncture of the parent metal and the overlay. This overlay as it was made represents the typical welded-on overlay of the present day.

Examining the overlay with the naked eye the first observation will be that the metal is to a small extent porous. It is not sufficiently porous to be spongy, but in the body will be found minute gas pockets. Also, there may or may not be hair-line cracks or minute checks on the surface. On the whole, the overlay will be found far from an absolutely solid body of metal. Solid bodies of metal have been produced with this material, but these absolutely solid deposits are the exception rather than the rule, as further investigation proved.

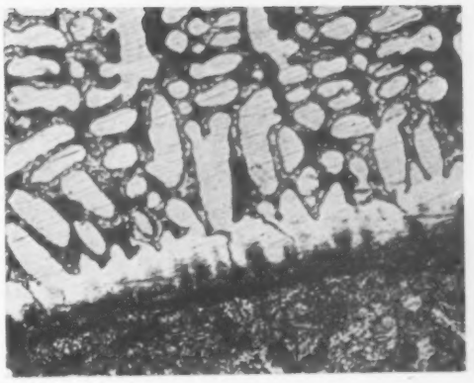
Under the microscope, the structure



Showing how the overlay or hardfacing material is applied in building up worn oil well drilling tools



THE sharp line of demarcation (left) between parent metal and overlay applied by ordinary methods. X100. When the overlay is made in a protective atmosphere, noticeable interalloying takes place at the juncture, as shown at right. X500



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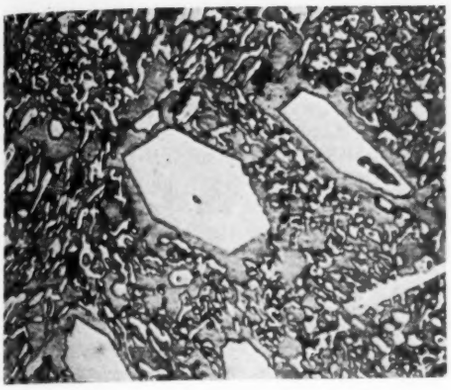
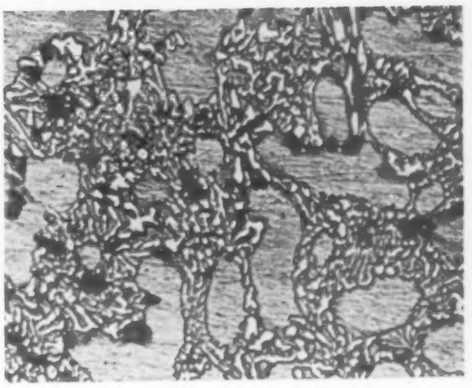


STRUCTURE of the common type of overlay metal, at left. X500. An overlay of the same material but made in a protective atmosphere, shown at right, exhibits better structure due to protection against oxidation and other chemical actions. X500



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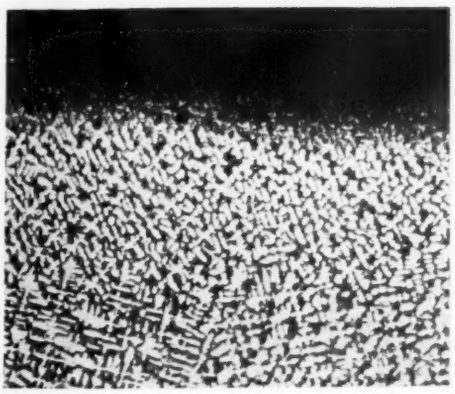
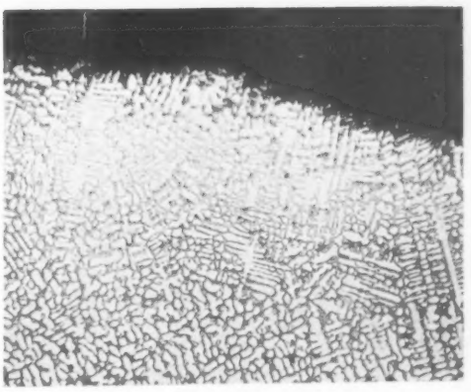


OVERLAY of chrome-nickel iron alloy (left) with no attempt made to prevent atmospheric action. X100. Right shows refined structure of same overlay metal, made in a protective atmosphere. X100. Photomicrographs taken near top of overlay



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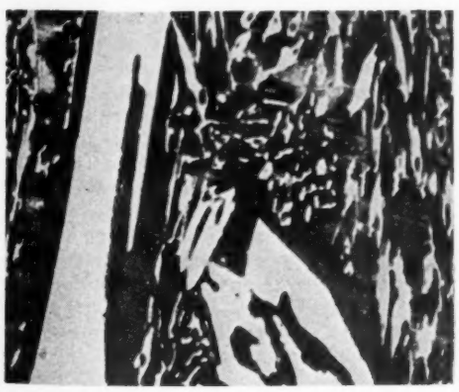
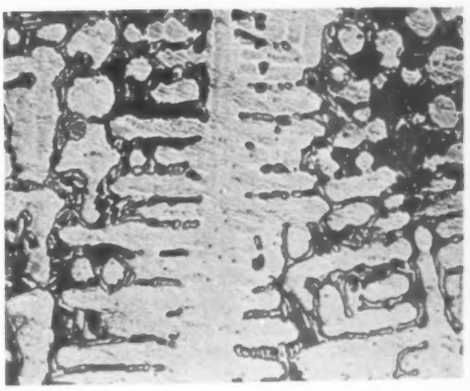
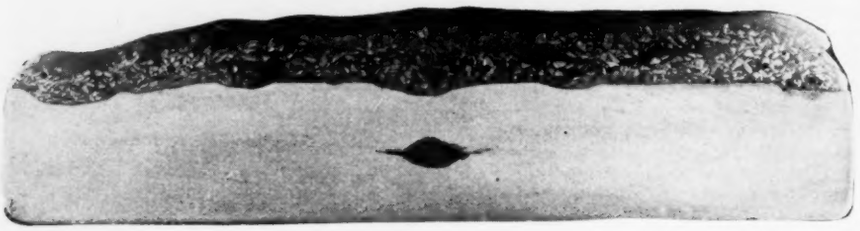


SECTION of an overlay made with no protection against atmospheric action, at left. X500. At the right is the same metal applied in a protective atmosphere, producing a noticeably different and more desirable microstructure. X500



of the overlay was found to be austenitic to a considerable degree, yet throughout this structure there were small needles that bespoke the action of atmospheric nitrogen. Also, a considerable amount of graphitic carbon was noticeable. On the whole, even at a magnification of only 100, the crystalline structure of the overlay showed an irregularity that is not desirable in any metallic body. The structure was quite indicative of hardness, yet no evidence was present of grain refinement or molecular cohesive strength. Without subjecting the overlay to physical test one would judge after examining the structure that the material was hard, yet every evidence pointed to the fact that it was brittle as well, and this conclusion proved to be correct. The overlay gave a hardness of from 58 to 60 on the Rockwell C scale, yet exhibited little resistance to fracture.



Polished cross section through a welded-on overlay consisting of a mild steel body in which are embedded tungsten carbide particles

When a chemical analysis was made of the deposit there was a still more startling discovery; the determined amounts of the various elementary constituents of the overlay did not correspond at all with the amounts of the same elements in the material before it was applied. Zirconium could not be found at all in the deposit and the proportionate amounts of manganese, carbon and other elements were changed entirely, indicating that during the fusion and deposition much had happened.

Quite naturally, the first theory was that a considerable portion of the material had combined with atmospheric oxygen while being exposed to the heat of the electric arc and either had been deposited as a free oxide or had sublimed off. To prove that this was correct, the material was coated with a deoxidizing agent before being exposed to the arc and another overlay deposited. With the oxidation prevented, a chemical anaylsis proved to be entirely different from the analysis of the first overlay, but the experiments were not stopped there.

Subsequently, a so-called flux-coating was developed and applied to the same material used in the first experiments. This flux-coating broke down as the coated metal was fused and by generating a hydrogen atmosphere about the arc as well as by forming a slag covering over the metal deposited, atmospheric oxygen, atmospheric nitrogen and other gases were excluded, and metallic gasification and sublimation were reduced to a minimum.

A welded-on overlay then was formed on the same grade of mild steel used in the first experiments but this time the flux-coated material was utilized as the electrode. An examination of this deposit, in contrast to the deposit formed with the same material less the flux-coating, was a revelation. Physically, chemically and metallurgically this last deposit was entirely different from the first, with the one exception of the hardness which proved to be approximately the same in both instances. This latter deposit was solid throughout, contained no needle-like crystals and proved to be tough instead of brittle. Little if any graphitic carbon was found and all the metallic elements were present in much nearer the same proportionate amounts as in the material itself, prior to its application.

Repeated tests and continued experiments along the lines outlined have proved conclusively both the sources of failure in present-day overlays as well as procedure to be followed in the future, at least insofar as the electric arc application of the overlay is concerned. Thus, an overlay formed in the open air is and always will be inferior, while an overlay formed in a protective atmosphere may be expected to give a good account of itself. Further than this, by employing a protective atmosphere it is possible to utilized as welded-on overlays much simpler alloys, and to obtain through a careful selection of alloys almost any desired characteristics.

Since the foregoing relates to a welding operation it may be considered as a recent development; yet, after all, the formation of an overlay is a melting and solidifying operation which should follow closely the general procedure of any melting and solidifying operation. If the materials melted have a tendency to gasify or sublime, preparation should be made against these contengencies. Likewise, if the materials melted have a tendency to oxidize readily, oxidation should be prevented. The temperature of the electric welding arc is much higher than the temperature necessary to fuse commonly used metals and alloys, so greater precaution must be exercised with the welding heat than would be necessary in the usual melting operation. Otherwise, the same general precautions and procedure apply.

Furthermore, with these recent data at hand and with a full knowledge of metallic elements and metallic alloys there is every reason to expect that the welded-on overlay now will receive a considerable impetus. Based on the present knowledge it should be possible to determine materials to meet any surface requirements. Overlays which will be dependable and which may be applied easily and economically are now possible. Certainly, it is another step ahead in a process which, crude though it has been and still is, has received a considerable amount of recognition through its successful adoption and employment.

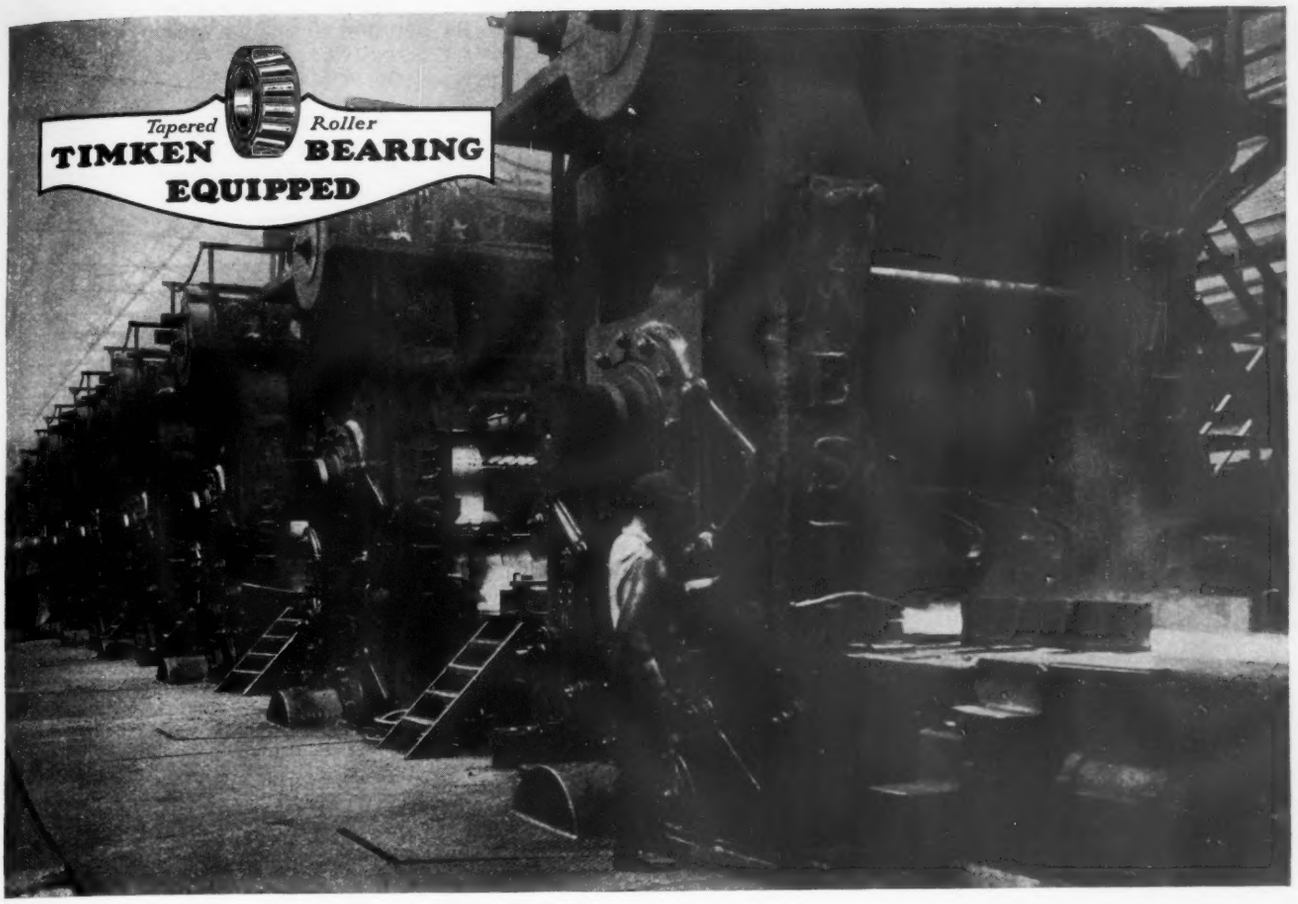
Many Applications Seen

Welded-on overlays first were designed to resist abrasion and corrosion, but there is no reason why their application should stop there. Often it is desirable to acquire surfaces consisting of metals or alloys which either through their expense or through their character are not fitted for the base material of the entire part. The overlay solves that problem and makes it possible to fabricate of one metal and overlay the surface with another. Before long machinery designers will take the welded-on overlay into consideration in their designs and will, through the economies made possible by its adoption, design and build for greater efficiency with an ever decreasing cost of manufacture.

Nothing has been said about the advancement possible in the method of applying welded-on overlays, but research and experiment have shown a considerable opportunity for improvement in that phase of the process. The present crude method of depositing overlays by using them as the electrodes in the electric welding arc will, without doubt, soon give way to a procedure which has been proved far more practical and efficient, but which is not ready at this time for general acceptance.

Alloy Standards Adopted

The heat and corrosion resistant alloy founders' division, Steel Founders' Society of America Inc., composed of manufacturers of heat, corrosion and acid resistant castings, held a meeting in Pittsburgh recently where recommended standards of practice relating to alloy castings supplied for use in industrial furnaces were approved. In some instances, through carelessness or other causes, the castings supplied have been subjected to conditions of fuel, atmosphere and temperature not set forth in the original specifications and requirements. The standards of practice have been adopted to define clearly the liability of the producers in such instances.



Timken Heavy Duty Mill Type Bearings in this giant hot strip mill have given perfect service over a two year period in the plant of The Wheeling Steel Corporation at Steubenville, O.

This four-high mill, built by the Mesta Machine Company, comprises 9 stands, all equipped with Timken Bearings on the back-up and work rolls.

It is another outstanding example of the service that Timken Bearings are giving throughout the steel industry.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Small Rolls, High Compression Influence Drawing Speed

BY W. FASS MAGDEBURG

DEVELOPMENT of mills for high compression in one stage has been hindered by the difficulties experienced in providing suitable bearings for the rolls. One of the chief requirements in present-day cold mill practice is that the roll bearings must withstand continuous and high specific loads without any fluctuation in their heating due to fricton. The 3-high roll arrangement shown in Fig. 1 represents one of the first designs incorporating, with signal success, a working roll of relatively small diameter, and idle rolls of considerably

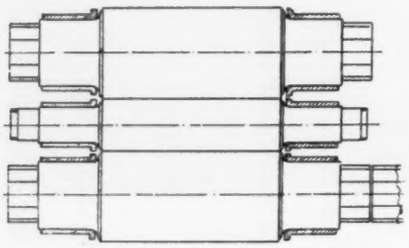


Fig. 1—Three-roll stand with the two upper rolls mounted in sliding bearings

greater diameter and weight which serve to take the pressures exerted by the middle roll. The rolls are provided with sliding bearings; the bottom roll is driven while the working roll and the top roll run idle.

All Rolls Make Contact

Since the top and middle rolls run in sliding bearings and serve merely as pressure rolls when the mill is running light, all three rolls are in contact with each other without a gap between them, and therefore it is only possible to deal with comparatively thin sheets. When feeding the material into the rolls, the non-driven middle and top rolls often fail to take up the drive, with the result that they merely grind one upon the other, thus injuring their high polish. This drawback could be remedied by driving all the rolls. But any difference which may occur in the speeds of rotation of the different rolls, the speeds being originally equal, may produce a serious tensional strain which would damage the surface of these costly, hardened rolls. As the small-diameter middle roll is subjected to considerably heavier wear and tear than are the top and bottom rolls a variation in the roll speeds is likely to occur.

By the use of roller bearings it was possible to drive the so-called thin-plate 3-roll stand according to the arrangement shown in Fig. 2. As will be seen, the two idle rolls are mounted in roller bearings, the small-diameter middle roll being driven. The advantages of this type of 3-roll stand are evident. Actual tests have proved that there is absolutely no need to fear, when starting the mill, that one or the other of the idle rolls will fail to rotate and thereby lead to a temporary but none the less injurious grinding of the driven roll upon the idle rolls.

Requires Less Power

By employing roller bearings, the power consumption of such a mill is appreciably less than in the case of a similar mill without roller bearings. Comparing the two arrangements as shown in Figs. 1 and 2, and assuming that the diameters of the large and small rolls respectively in each case are the same, it is obvious that the drive for such a mill fitted with roller bearings and having a driven middle roll, can be built essentially lighter. This is possible on account of the smaller driving power required and because the driving torque is reduced by the ratio in diameters as between the driven and the nondriven rolls. Three-high mills with sliding bearings and with roller bearings are best suited for the rolling of thin sheets. Thicker material, however, is handled better by mills having two driven working rolls, an arrangement which has led to the design of 4 and 6-roll stands.

Working Rolls Are Driven

A 4-high mill, designed by Krupp-Grusonwerk, at Madgeburg-Buckau, Germany, is built for the cold rolling of strip in all metals up to a width of about 25½ inches. The effective length of the rolls is 29½ inches. The two working rolls, which run in sliding bearings, are driven, while the other two rolls, which are mounted in roller bearings, serve merely as pressure rolls and run idle. The design of the roller bearings and their

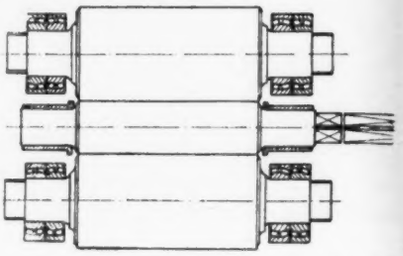


Fig. 2—Three-roll stand with the two idler rolls mounted in roller bearings

housings is such that they adjust themselves automatically to any sag of the rolls.

The pair of lower rolls as well as the pair of upper rolls are pressed firmly together, so that a constant taking up of the drive by the idle rolls is assured, especially when starting up the mill without load. This consequently, eliminates all possibility of the driven rolls slipping and grinding on the nondriven rolls. The upper pair of rolls of this stand are held in firm contact with each other by pressure screws actuated by springs, vertical adjustment being effected by an electrically-driven adjusting device. A separate motor is provided for each screw, but both the screws can be adjusted simultaneously, while the material being rolled is beneath the roll, either when running or when at a standstill. The adjusting speed of the screws is variable within wide limits, in fact, the maximum adjusting speed is about 20 times that of the normal. At the same time, adjustments can be made within a limit of accuracy of 0.0002-inch and read on suitable dials.

Both working rolls are driven by a reversing direct-current motor in conjunction with a Ward-Leonard set. The speed of the driving motor

TENSILE properties of thin sheets and strip are influenced largely by cold rolling and annealing at different temperatures. If stock is given a 20 per cent reduction in a single pass it can be annealed at a temperature approximating 1076 degrees Fahr.; if a lower reduction is taken an annealing temperature of 1652 degrees Fahr. is required to regain the necessary working properties. In the accompanying article, abstracted from a report presented in the Iron and Coal Trades Review, the author, W. Fass Magdeburg, traces the development of multiroll mills designed for high compression.

Helping Erect the West's Largest Bridge

California's historic old train ferries, Solano and Contra Costa, are being retired. So ends one of the fascinating phases of western travel which survived for half a century but has now become too slow. In their place stands a monumental example of engineering and construction progress, the new Southern Pacific railroad bridge across Suisun Bay.

Forty-four million pounds of steel were required in the vast superstructure of this bridge. Erecting this steel was a difficult task and several Industrial Brownhoist heavy-duty erection cranes were used by the American Bridge Company on the work. The structure was completed in record time and six weeks ahead of schedule.

Greater speed at lower cost is the need today and nowhere is this more essential than in the handling of materials. Thousands of owners will tell you that an Industrial Brownhoist locomotive or crawler crane is the best answer to this challenge. You can determine this for yourself by letting our representative show you some of these cranes at work. The time spent will be well repaid.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.
Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

INDUSTRIAL BROWNHOIST

is variable to suit a roll speed ranging from 0 to 115 feet per minute. The two reels or winders placed one in front and one in rear of the stand are driven by separate direct-current motors connected in the Ward-Leonard circuit of the main driving motor. Their speed is adjusted automatically during rolling while maintaining a definite pull on the strip being rolled, and the amount of this pull can be controlled to suit the thickness of the material passing through. The main driving motor for the rolls and the winder motors can be operated simultaneously by a lever located on the main frame of the stand. Steel strip of deep-drawing quality, 0.03937-inch thick and 23⅝ inches wide can be compressed 80 per cent in a single stage. Commercial brass of 63 per cent copper, 0.059-inch thick and about 24⅜ inches wide, can be compressed 55 per cent in one stage. When rolling steel of a tensile strength of 45 tons per square inch, about three times the output capacity was attained as compared with a corresponding 2-high mill of the usual type.

Of multiroll stands, the 6-roll or cluster mill is also much in favor. It differs from the 4-high design in that each of the two working rolls works against a pair of pressure rolls in the manner shown in Fig. 3. In the case of the 6-roll mill, the diameter of the working rolls can be made relatively smaller than with the 4-high mill, since a deflection of the working rolls in the horizontal plane is impossible with the roll arrangement, shown in Fig. 3. Tests with 4-high mill have proved, however, that the diameter of the working rolls, having regard to the drawing-in of the material through the rolls with the latter adjusted for heavy reduction percentages, must be greater than the deflection of the working roll in the horizontal plane would ordinarily necessitate. The advantage of being able to employ working rolls of proportionately small diameters in the case of 6-roll stand can be utilized for rolling thin and wide material.

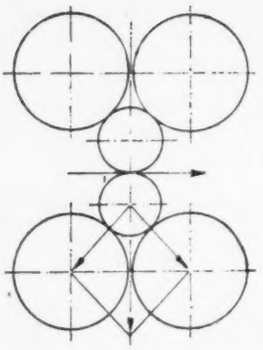


Fig. 3—Arrangement of the six-roll mill known as the cluster type mill

Efforts Being Made To Improve Properties of Nitriding Steels

EFFORTS in the development of nitriding steels have resulted in the introduction of two new nitriding steels, one containing 1 per cent molybdenum with 1 per cent aluminum, and the other containing 1 per cent chromium with 0.4 per cent vanadium, both of which machine as easily as alloy steels of the same hardness. These facts and others were brought out by Dr. Victor O. Homerberg, technical director of the Nitralloy Corp. and professor of physical metallurgy at Massachusetts Insttiute of Technology, Cambridge, Mass., speaking on recent developments in nitriding at a recent New England spring sectional meeting of several chapters of the American Society for Steel Treating, at Hartford, Conn.

Dr. Homerberg gave details of an investigation of nitriding steels, one containing 0.02 per cent sulphur and one 0.17 per cent sulphur, which showed identical tensile properties and hardness after heat treatment. The favorable action of zirconium sulphide upon machining properties of the steel also was mentioned.

A development which is being perfected rapidly is the production of a nitriding steel which will have a high core hardness. One type containing carbon, chromium and vanadium can be heat treated to 400 to 500 brinell.

Pyrex and copper tubes are being used as containers for nitriding and while extensive tests with copper tubes have not yet been made, one steel gave exceptional hardness after a high draw back treatment. Twice the usual depth of case had been obtained and the case was noticeably brittle.

A high-speed steel containing 0.74 carbon and 0.88 aluminum gave 1400 diamond brinell, the greatest hardness ever produced by nitriding. Another type of 0.35-0.50 carbon and 18 per cent tungsten gave 1200 Vicker's brinell at 100-kilogram load after nitriding 72 hours at 950 degrees Fahr.

Recent tests have shown that the common mistake made in nitriding is the use of too long a period for the requirements of the part. One job was cut from 96 hours nitriding to 12 hours and excellent results were obtained.

Atomic hydrogen welding of nitrided parts can be done successfully. The grain growth in the metal adjacent to the weld has not been elimniated so far by subsequent heat treatment, but a uniform depth of case and a hardness of 1100 to 1200 Vicker's brinell has been produced across the weld.

Containers made of nickel have given as high service as two years while others have lasted but a short time due to the action of the ammonia. 18-8 corrosion-resisting steel has been found worthless for this process due to the abnormal ammonia consumption. Enameled containers are the best if properly coated. One enameled container has been in use for 3000 hours and is still in good condition. Care must be taken not to chip the enamel in handling the part to be nitrided, and blistering and spalling will occur if the coating is not sound.

New Cycle Employed

An interesting nitriding cycle has been developed by the Leeds & Northrup Co., Philadelphia, in which, after nitriding at 950 degrees Fahr, for nearly 48 hours, the temperature was raised to 1150 degrees Fahr. at the end of the heat.

One of the most interesting methods of testing the nitrided case has been developed by V. T. Malcolm, Chapman Valve Co., Indian Orchard, Mass., in which one nitrided sample is rotated in rubbing contact with another sample. The loss in weight after a period of time indicates the hardness of the nitrided case.

Any decarburized area of steel to be nitrided must be removed or spalling will result. The outside layer of a nitrided case will be brittle regardless of the cycle used. European practice is to grind off this skin. The maximum hardness of the case is found under this skin. In nitriding a ball race 0.002-inch should be removed by grinding.

A suitable bearing metal to run against nitrided parts is of the following composition, in per cents: Copper, 3.5 to 4.0; nickel, 0.50 to 0.90; magnesium, 0.50 to 1.00; silicon, 0.30 to 0.75; and the balance aluminum.

J. J. Crowe, Air Reduction Sales Co., was elected chairman of the New York chapter of the American Society for Steel Treating, at a recent meeting of that group. Other officers include E. M. Wise, International Nickel Co., vice chairman; and T. N. Holden, E. W. Bliss Co., secretary. Members of the executive committee are E. H. Anthes, chairman, E. J. Bothwell, M. T. Garlinger, Alexander Gobus, A. B. Kinzel, William Pritz, F. T. Sisco, Sam Tour and J. S. Vanick.

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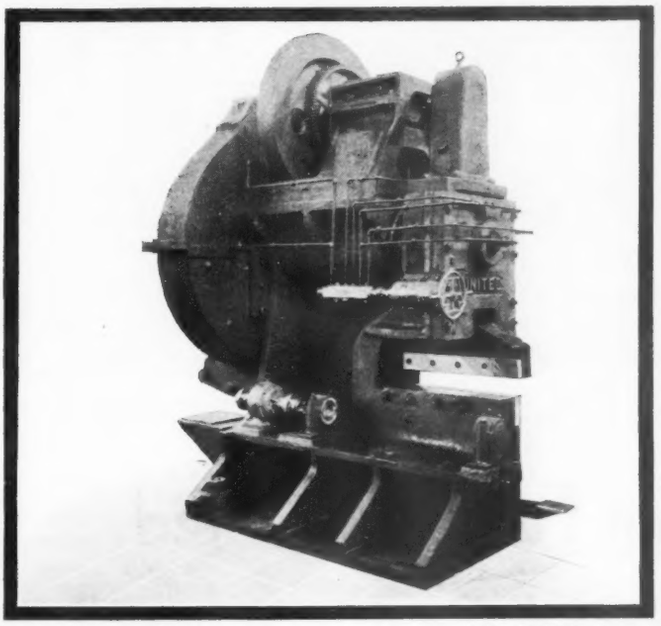
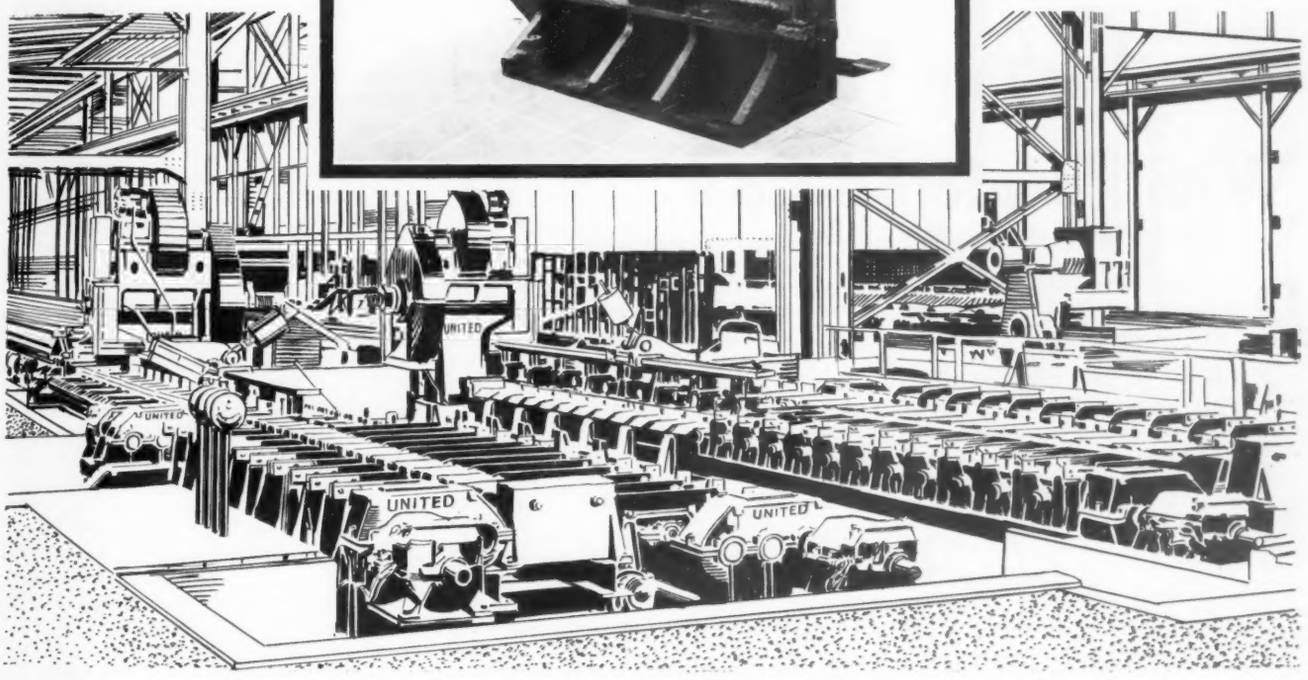


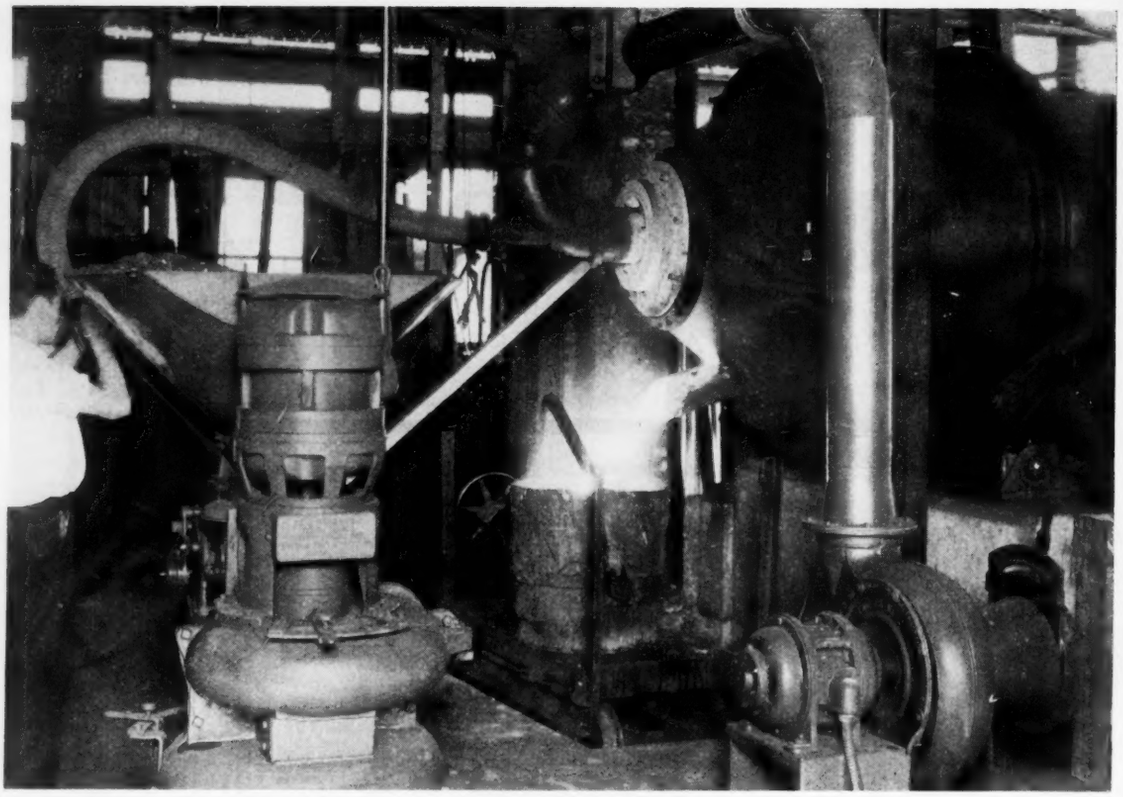
No. 3 VERTICAL SHEAR
Cap. 2″ Square Cold Soft Steel



UNITED

ENGINEERING *and* FOUNDRY COMPANY
PITTSBURGH --- PENNSYLVANIA

ROLLS AND ROLLING MILL EQUIPMENT



Tapping a heat from the Brackelsberg furnace. In the foreground is a direct firing pulverizer and at the right a secondary air fan. Operator at the left is taking an optical temperature reading on the heat

New Melting Furnace Is Fired With Powdered Coal

RAPID advance made in the mechanical arts during the past decade has created a definite need for gray iron of greater strength and quality. Considerable competition has grown up also from the advent of structural steel and improvements attained by welding, forging heat treating and stamping. This need for better iron—iron of higher strength, greater toughness, more uniform structure—is claimed to have been met by the Brackelsberg melting process, involving melting in a rotating furnace fired with powdered coal.

The Brackelsberg furnace was developed in Germany and is now in use in several European countries. Negotiations were arranged recently by engineers of the Whiting Corp., Harvey, Ill., to introduce the furnace in American foundry practice and a test unit was installed at Birmingham, Ala., furnishing data which indicate the process is economical and productive of high grade irons, both gray and malleable, and is well adapted to conditions in this country.

The furnace, views of which are shown in accompanying illustrations, consists of a cylindrical drum with removable conical ends for convenience in relining and repair. This drum rotates within a cradle and is carried on two steel tires around the drum. The tires engage power-driven rollers on the tilting cradle, thus giving the drum the 15 feet per minute rotation required during the heat. The cradle is carried on two trunnions supported in standards at the sides of the cradle and located at the center of gravity of the drum and the cradle, thus minimizing the power required to tilt the drum for charging or pouring. The tilting is accomplished by gear segments attached to the cradle and driven by pinions supported in bearing blocks on the concrete foundation. Inside diameter of the drum of a 2-ton furnace is 4 feet 11 inches, and the overall length 14 feet 9 inches.

The Brackelsberg furnace, lined with rammed ganister material, in European practice has shown a lining life of about 200 heats, the life depending largely on the care taken in patching. Because of the rotating action the heat in the lining is continually transferred to the metal. This cooling action on the lining, plus the fact that no one part of the lining is subjected to a higher temperature than the rest, accounts for the comparatively long life of the lining, and in a measure for the economy in fuel. An insulating lining may be placed between the furnace shell and the refractory lining, although this is not essential.

Pulverizing Equipment

The pulverized coal required for firing a Brackelsberg furnace may be supplied by either a central plant system or a direct-fired system, shown in the illustration above. In this case a small pulverizer with air separation is installed with the furnace. Suitable fan equipment is necessary to convey the pulverized coal to the burner and supply air for combustion. A furnace stack also is necessary to carry the products of combustion and ash out of the foundry building.

A recuperator may be installed between the furnace stack and the burner. Any amount of preheat obtained in the secondary air means a higher flame temperature, increased speed in melting and a higher maximum temperature obtainable. It is not necessary to use a preheater to melt gray iron or malleable iron, but it is essential when melting steel.

The furnace is charged in an inclined position, as shown in the smaller illustration. After the furnace is charged it is tilted to a horizontal position for melting, and if the furnace is cold a small wood fire is start-

ed at the burner end. The burner then is swung into position and the firing equipment started. Rotation is not started until the charge is melted down. When the bath is ready for pouring the taphole is rotated to a position where it can be cleaned properly and then rotated to down position for pouring. All the metal can be poured from the furnace at a consistent rate by tilting the drum a few degrees. When the metal has been tapped out the furnace is tilted to charging position and the slag removed from the rear end.

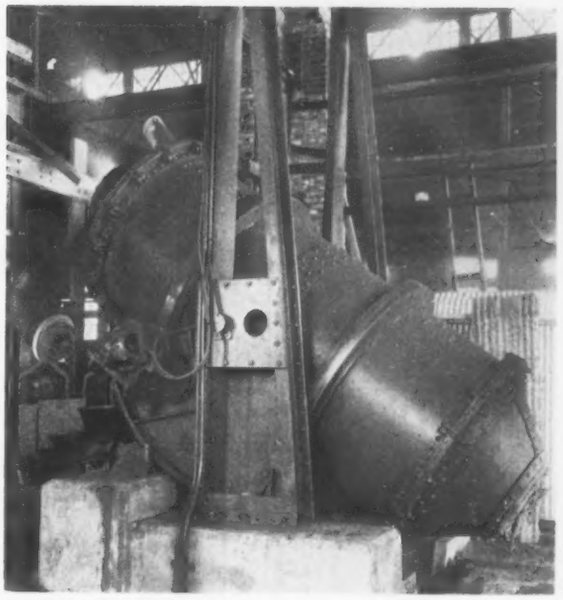
High Quality Iron

An essential characteristic of the Brackelsberg process is said to be the high quality of the iron produced. Total carbon is controlled easily, a 3 per cent carbon iron approximating actual practice. Accompanying photomicrographs were prepared from unetched and etched sections of test bars melted in the 2-ton Brackelsberg furnace. Tensile tests on a series of bars of iron made in this furnace showed strengths ranging from 35,000 to 46,000 pounds per square inch. Brinnell hardnesses of these bars averaged 235.

Iron in this furnace is ordinarily at high temperature when poured, temperatures ranging from 2700 to 2850 degrees Fahr.

The advantages of high-quality iron melted at high temperature are obtained economically. In place of coke, low priced bituminous coal is used and the only power required is for operating the pulverizer and for tilting and rotating the furnace, this amounting to approximately 12 kilowatt-hours per ton of melt.

Loss of iron by oxidation is low, averaging less than 2 per cent. This saving is due to the fact that no gases pass through the metal and the metal is at all times covered with a protective coating of slag. Also, the pulverized coal flame is directed toward the lining, which gives up its heat from the underside of the bath during rotation. By firing with powdered coal perfect control of air and coal feed is approximated and only sufficient air added to give complete combustion.



THE furnace in charging position with charging chute in place at the upper left. Slag is removed from the furnace in this position. The motor attached to the gear segment is the rotating motor. The burner is shown center left, swung back out of firing position

Approves Revised Wrought Iron Specifications

American Standards association has approved two new American tentative standards, specifications for refined wrought iron bars (G12-1931), and specifications for wrought iron plates (G13-1931). These were submitted by the American Society for Testing Materials as sponsor.

Both specifications were approved originally by the Standards association in 1923 as tentative standards. They have now been revised by the addition of a definition for wrought iron and the elimination of the reference to puddling. The definition of wrought iron reads:

"Wrought iron is a ferrous material, aggregated from a solidifying mass of pasty particles of highly refined metallic iron with which, without subsequent fusion, is incorporated a minutely and uniformly distributed quantity of slag."

Elimination of the reference to puddling affects the specifications concerning the manufacture of the products. The original specifications stipulated that the bars according to G12 and the piles according to G13 should be made from puddled iron. The revised specifications simply specify that the bars and piles shall be made from wrought iron.

Copies of the standards are available at 25 cents per copy from the American Standards association, 29 West Thirty-ninth street, New York.

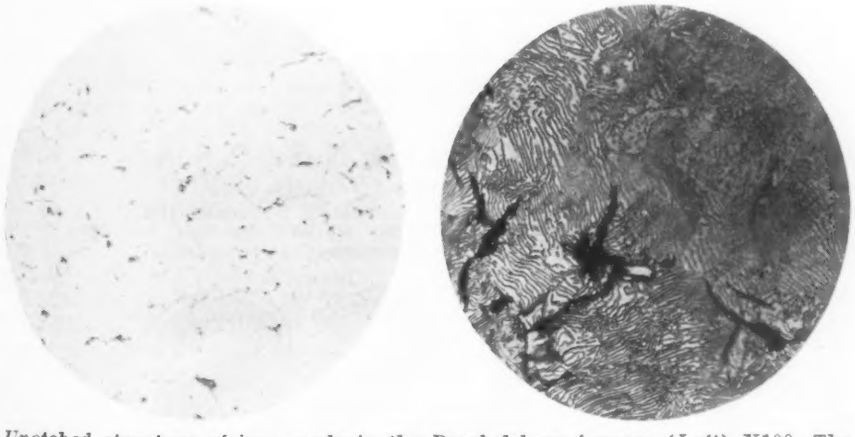
Develops New Process for Reducing Iron Ores

A new process for the reduction of iron from native ores without smelting, perfected by W. H. Smith, metallurgist, Detroit, is attracting attention in technical circles. A license to use the patented process in this country has been issued to the Ford Motor Co.

The Smith process, which is controlled by the General Reduction Corp., consists in heating ore or any material containing iron oxide in retorts. The ovens may be fired with coke and other types of fuels. Because the product is sponge iron it cannot be compared directly with blast furnace iron.

After reduction the iron exists in particles of soft powder, some of which are light enough to float in air. In this form, the iron, mixed with the gangue, is pressed into briquettes. Reduction of the iron oxides is 100 per cent. When the briquettes are melted in the cupola or open-hearth furnace, the gangue floats off leaving the iron and carbon in combination.

Five ovens, each 10 x 16½ x 20 feet, now in operation at the plant of the General Reduction Corp., Detroit, have a combined daily capacity of 50 tons.



Unetched structure of iron made in the Brackelsberg furnace (Left) X100. *The full pearlitic structure of an etched specimen is shown at the right.* X500

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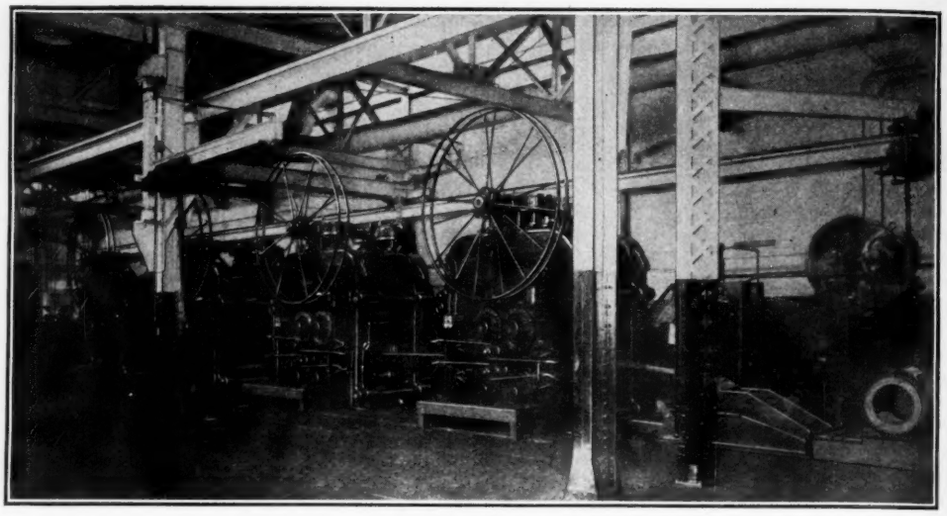

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No. 576

Scabs in Castings Traced To Molding Sand Defects

A CENTER of researches for the foundry industry in France now nearing completion has been offered financial assistance by the Societe des Hauts-Fourneaux de Saulnes and the use of modern laboratories at the Saulnes works. This fact was brought out at the tenth annual meeting of the Association Technique de Fonderie de Paris held in Paris, May 21 by M. Luc, president of the association. This center of researches, he stated, will be an independent organization.

Professor Portevin, president, International Committee on Cast-Iron Testing Methods, explained the influence of speed in the shearing test, the putting of results into formulas, and the degree and index of homogeneity of cast iron. He emphasized the necessity of repeated tests, to secure satisfactory average measurement.

Outlines Training Course

M. Hiernaux, director, Universite du Travail, Charleroi, Belgium, in speaking on "The Training of the Molder," gave a complete report on the schedule of studies which has applied at the university over a period of three years. According to this schedule, a preliminary study of defects is made in the first year, and a complete theoretical study effected in the third year of the course.

The exchange paper of the Belgian technical association, was presented by its president, J. Leonard, the subject being: "Contraction in Pulleys and Fly-Wheels." E. V. Ronceray said that the only general rule to be applied in the case of such pieces was to subject the casting to a stabilization treatment, which consists in taking the casting when solidified completely and cooling it slowly in a pit. The use of high-duty cast-iron, he stated, is of practically no value if any internal stresses remain in casting. M. Le Thomas mentioned that in certain cases the placing of nails at the junction of the rim and of the arms of the pulley had prevented the formation of cracks. Another speaker suggested that the rounded-off part at this junction either should be suppressed or reduced to a minimum.

M. Gasquard in speaking on "Scabs in Castings," mentioned the formation of two types of scabs, which, according to French nomenclature, are called "real" scabs and "faulty" scabs, each term being applied in relation to the manner in which the sand of the mold has been displaced in the formation of the defect. Discussion revealed considerable differences of opinion in regard to the particular case to which each term should apply. With regard to the actual causes of the defect, M. Ronceray stated that scabs come from a defect of permeability of the sand. This can happen either by the fact that the sand actually is not homogeneous, or that the molder has not rammed his mold equally. Mention also was made of the defects caused by trapped gases in parts where the mold contains chills. In speaking on "Soaking Furnaces in the Aluminum Foundry" Pierre Girod, engineer, compared the use of crucibles in graphite and in cast-iron, particularly relative to the casting of chilled castings and discussed causes and remedies of hard grains, the use of graphite crucibles and the use of cast-iron crucibles.

P. L. Montupet, in discussing this paper stated that, contrary to the case of other metals where the slag rises to the surface, in aluminum the oxides and the grains of graphite remain suspended in the metal, even after it has been agitated. Cast-iron crucibles in his opinion do not answer completely to the requirements of the foundries making chilled castings. He emphasized the necessity of thoroughly cleaning the crucibles each day. M. Le Thomas emphasized that sufficient attention had not been given to the utilization of cast-iron crucibles which do not contain any additions of special metals such as nickel or chromium and in his opinion crucibles of pearlitic cast-iron would be the most resisting.

Cites Mechanical Destruction

L. Girardet, foundry proprietor at Saint-Die, mentioned mechanical destruction as an important factor. The metal in the crucible, he stated, is subjected to an interior pressure which tends to deform the crucible. E. Durville, consulting engineer, Paris, pointed out that a slight agitation of the crucible after the addition of some manganese chloride assists in forcing oxides and inclusions to rise to the top of the aluminum bath, especially those coming from the sides of the crucible. He added that when the crucible first is cleaned it should be at a temperature of slightly over 100 degrees Cent., in order that no humidity remains since any water included in the sides eventually would distend the material of the sides.

The exchange paper of the American Foundrymen's association, entitled: "Measuring Molten Metal Temperatures in the Brass Foundry." by H. M. Saint John, chief metallurgist, Detroit Lubricator Co., Detroit, was presented by V. Delport, European representative of the American Foundrymen's association. Referring to a passage in the paper in which the author states that "the present tendency among progressive foundrymen is to use the lowest possible pouring temperature, in order to get maximum soundness and strength," J. Derdinger, honorary president of the syndicate of bronze founders, Paris, stated that the advisability of pouring with hot or cold metal depends upon the thickness and weight of the casting. In his opinion it is advisable to use hot metal when casting light brass. Referring to a remark made during the discussion that pyrometers are not extensively used in the foundries of the Paris district, Mr. Ronceray stated that it must be taken into consideration that only a few foundries produce tonnages comparable to those normally made in the United States. M. Le Thomas mentioned that in the case of high-resisting brasses, the metal should be poured at the lowest possible temperature. The discussion brought out differences of opinion on the advisability of pouring hot or cold.

Gate Influences Contraction

In discussing "Contraction in Iron Castings," M. Girault mentioned (1) that cast-iron is malleable at a temperature of between 600 and 900 degrees Cent.; (2) that cast-iron is susceptible to elastic deformation at a temperature around 100 degrees; (3) that in a casting with a variety of thicknesses, the position and shape of the gate have considerable influence during contraction on the permanent deformations which will result later; and (4) that the method of pouring a casting with various thicknesses, at the thinnest parts is barely sufficient to prevent the bad effects of contraction.

The exchange paper of the Institute of British Foundrymen was presented by J. H. D. Bradshaw, of Bradley and Foster, Ltd., Darlaston, whose subject was: "The Enameling of Cast-Iron." M. Flour presented a paper entitled: "Remarks on a Few Phenomena of Solidification in the Steel Foundry," and the meeting ended with the presentation of the report of the French Committee on Cast-Iron Testing Methods by A. Le Thomas president of the committee, and P. Nicolau, the author of the exchange paper presented at the Chicago congress of the American Foundrymen's association.

Watervliet Iron & Brass Foundry Colonie, N. Y., has increased capital from $25,000 to $75,000.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Cyanide Furnaces

Deterioration of chrome-nickel heating elements in cyanide furnaces, discussed by R. F. James and Glenn Coley, in Electrical World, June 6, p. 1057, 2 pp., 3 illusts.

From field observations the authors draw the following conclusions. First, cyanide or its components have a deleterious effect upon chrome-nickel alloys. Second, the reaction between cyanide and chrome-nickel alloys increases rapidly with an increase in temperature, and about 1650 degrees Fahr. is the maximum safe temperature for economic operation. Third, it is not economically practical to exclude cyanide or its components from the element chamber. Fourth, the deterioration of chrome-nickel heating elements heated in air is exceedingly slow at temperatures below 1800 to 2000 degrees Fahr.

A test pot having an input of 43 kilowatts is described and depicted. After 1800 hours operation no scale was found around the elements. Electrical tests and physical examination showed no deterioration of the elements. On production this furnace consistently produced more than 4 pounds of work per kilowatt hour without any covering of the pot.

—STEEL, 6-18-31

Chromium Plating

Technique and equipment used in modern chromium plating installation, by Robert D. Zimmerman in Metal Progress, June 1931, p. 54, 6½ pp., 6 illusts.

Chromium plating, as practised in the plant of a large eastern manufacturer, is controlled by the metallurgical department and its activities are directed exclusively toward the application of chromium to the surface of metal objects for improving their resistance to abrasive wear, a class of work known as "hard plating." Customary residual thickness of the plate is 0.002-inch, and in a few parts 0.035-inch.

The plate is applied directly to the metal from which the article is made, underplates of copper and nickel being omitted since they are considered unnecessary and undesirable. Satisfactory bond is obtained by careful grinding and frequent sandblasting.

In the plating operation conforming anodes are used exclusively. Two independent plating units are operated, one a 100-gallon 1000-ampere tank and the other a 500-gallon 2500-ampere tank. Each outfit includes six tanks, the sequence in the smaller unit being hot water rinse, chromic acid cleaner, alkali cleaner, cold water rinse, first plater and second plater.

—STEEL, 6-18-31

Lubrication

Economy of correct lubrication in the machine shop, discussed in Machinery, June 1931, p. 766.

It has been proved in actual service that high-grade oils produce so much more effective lubrication than inferior oils that they are more economical to use in the long run. Through the use of the best oil for any given purpose, economically applied, it has been possible not only to reduce materially the cost of the lubricant itself, but to reduce the expense for repairs and maintenance, for oiling labor, and for power as well. Also, in many instances the productive capacity of shop equipment has been increased.

The article records a number of cases where definite advantages have been obtained from the use of high-grade lubricating oil, properly applied. In many cases, the savings have been larger than the total bill for the new oil; therefore, the saving of a few cents per gallon in the first cost of oil is not an important consideration.

—STEEL, 6-18-31

Furnace Walls

Importance of refractories in bricking and many kinds of furnaces used in the oil, cement and steel industry, discussed by G. P. Reintjes, in Blast Furnace and Steel Plant, June 1931, p. 859, 2½ pp., 3 illusts.

Causes of failure of furnace walls due to design are cited by the author as insufficient furnace volume and draft, a poorly designed breeching connecting the boiler and the stack and the lack of mechanical soot blowers in boilers burning oil or coal. Baffle design is one of the major causes of the success or failure of a boiler installation. Factors dependent upon operation include the impingement of the flame on the walls, allowing slag to adhere to the walls, careless use of the slice bar, character of the furnace atmosphere, method of firing the boiler to its capacity too rapidly and the rate of wall cooling. Factors dependent upon the installation and seasoning of the setting before operation include the proper selection of refractories, design of the furnace wall structure, the amount of heat that can be retained by the walls, the expansion phenomena and the thorough knowledge of the contractor and erecting mason of the conditions under which the furnace will operate.

—STEEL, 6-18-31

Water-Cooled Furnaces

Gradual growth, application and different designs of water walls as applied to underfeed stoker furnaces, discussed by P. N. Oberholtzer, in Proceedings of the Engineers' Society of Western Pennsylvania, May 1931, p. 257, 19 pp., 17 illusts.

Water cooling, properly located, provides protection in the furnace walls along the fire line adjacent to the fuel bed of the stoker and prevents the adhesion of slag and the consequent erosion produced by the moving bed of fuel. Another important requirement of water walls is the ability to provide access and observation doors which are located conveniently without requiring costly water-wall construction.

—STEEL, 6-18-31

Aircraft Welding

Cause and prevention of heat cracks in aircraft welding, discussed by H. S. George, in Mechanical Engineering, June 1931, p. 433, 6½ pp., 19 illusts.

The prevention of heat cracks is not difficult and the procedure necessary to employ is greatly simplified by the fact that practically all cracks fall into two main groups: The edge crack, which predominates; and the crack caused by some internally-stressed condition of the metal. A simple expedient suffices to prevent each type of crack: For the edge crack, welding toward the edge; and for the other type, a preliminary heating to remove latent stresses. Auxiliary expedients and precautions may apply to individual cases.

—STEEL, 6-18-31

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Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Brake for Heavy Plate Is Hydraulically Operated

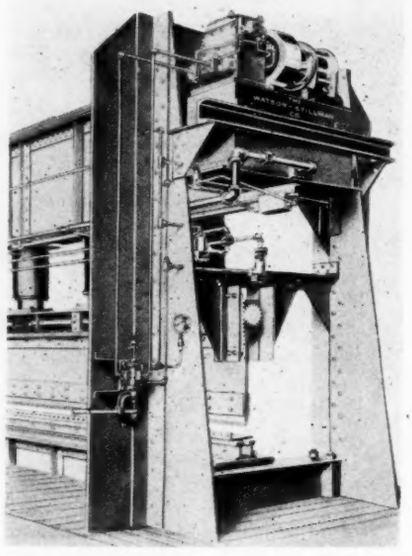
Watson-Stillman Co., Roselle, N. J., has collaborated with Duff Patents Co., Pittsburgh, in the development of a new type of plate bending and forming brake of hydraulic type for use on large, heavy work. This machine, which in its experimental stages was described on Page 64 of the August 28, 1930, issue of STEEL, has its hydraulic mechanism shown in detail in the accompanying illustration.

The steel frame lends itself to either welded or riveted construction, and its open ends allow easy endwise removal of finished work as well as allowing bending of pieces longer than the bending die. The bending beam, which is held in alignment with the base by a parallel motion mechanism, is operated by large, hydraulic cylinders mounted on the frame. These cylinders are installed on fixed centers spaced to suit particular production conditions, either with equal spacing to give equal load distribution over the length of the bending die, or with irregular spacings to exert pressure at predetermined poiints.

Selective Control

Cylinders can be operated in multiple, or any grouping of one, two or three at a time, and are controlled simultaneously by a single valve lever. Each cylinder can be cut in or out of operation by a telltale valve coupling mechanism which indicates at a glance which cylinders are in or out of operation. It is unnecessary to loosen any bolts to cut a cylinder out. This selective cylinder control materially increases speed of operation on light work and also reduces horsepower consumption. The opening between the steel rails used for bottom blocks is changed easily by using pipe spacers and bolts of different lengths, and is quickly adjustable to suit bends of various radii, including conical shaped sections.

The pump, mounted on the end section of the press frame, is one of rotary type manufactured by the Oilgear Co. and operates at 2500 pounds per square inch maximum pressure with variable delivery discharge which increases as the press load decreases. The operating fluid is oil, working in an entirely enclosed system, the discharge going to an oil reservoir in the base of the pump and motor unit. This reservoir also acts as a prefill tank for quick operation when the press is not under load.



Heavy plate brake operated by Watson-Stillman hydraulic equipment

Operation is controlled by one single-level valve provided with a swivel handle so that the operator can watch his work from either front or end of the press. Instant control of rapid down stroke, pressure stroke, neutral position and up stroke of rams is obtained by slight shifts of this operating lever. Hydraulic gage and motor pushbutton control are located close to the operating valve. If desired, electric flasher signals can be installed close to the operating position to indicate the limit position of the bending die.

This press is offered in 250, 500 and 1000-ton capacities, the flexibility of design due to welded or riveted steel plate construction allowing for a wide range of sizes in each case, with minimum expense for fitting to specific needs.

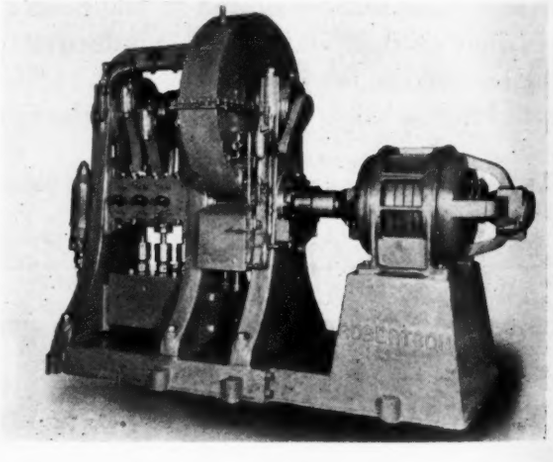
◆

Improved Hydraulic Pumps Have Many Applications

John Robertson Co. Inc., 123-131 Water street, Brooklyn, N. Y., announces a new line of hydraulic pumping units for operating equipment used for aluminum extrusion, bakelite molding, automobile body forming, steel forging, etc. One of these units is shown in the accompanying illustration.

The unit consists of a three-cylinder pump with overhead crankshaft, directly driven through gear and pinion, the motor being connected through a flexible coupling. The box frame gives three point support to the crankshaft, an outboard bearing being provided beyond the main gear. This outboard support also gives substantial two-point bearing for the pinion shaft.

Plungers of rust-resisting steel are guided above and below the packing



One of the line of high pressure triplex pumping units developed by John Robertson Co. Inc. for hydraulic operation of presses used in extrusion, bakelite molding, heavy stamping and forming, steel forging, etc.

glands by long bronze guide bushings which insure plunger alignment and long life. Deep glands and low plunger speed give long life to the plunger packing. Bearings of the knuckle joints are bronze lined and run in oil. These take full pressure inside the cross-heads, which are guided with adjustable cast iron shoes of large area. The pump chamber is a solid block of forged steel with all passages drilled in the solid metal. Valve checks and valve seats are of forged bronze, of ample size to give low velocity of water over the surfaces. The eccentric shaft is a steel forging with all bearings lined with bronze.

Integral Shaft and Pinion

The accurately cut drive pinion is integral with the pinion shaft, which is mounted on tapered roller bearings of generous proportions. Pinion and pinion shaft bearings run in filtered oil bath, oil being circulated by a Brown & Sharpe oil pump.

These hydraulic units are furnished in 30 different capacities ranging from 220 to 8 gallons per minute, and ranging in maximum pressure from 1000 pounds per square inch in the case of the largest capacity pump to 6000 pounds per square inch in the case of the smallest. Drive motors rating from 35 to 150 horsepower are required.

◆

Large Face Grinders Are Hydraulically Operated

Hanchett Mfg. Co., Big Rapids, Mich., has placed on the market a new line of face grinding machines featuring hydraulic operation. The accompanying illustration is a general view of one of these machines, showing the control mechanism, the method of driving the wheel, and the belt covered ways.

Ordinarily these grinders are equipped with a segmental block wheel 36 inches in diameter, which is driven by a 40-horsepower motor through a silent chain. A counterbalanced wheel dresser is in place ready for instant use. The wheel spindle, which is of generous proportions, is mounted upon precision radial and thrust ball bearings. It is provided with a brake which quickly brings it to a stop when the power is shut off. A motor-driven coolant unit, with a 75-gallon tank, plays two 1¼-inch streams of coolant, one on the wheel, the other on the work.

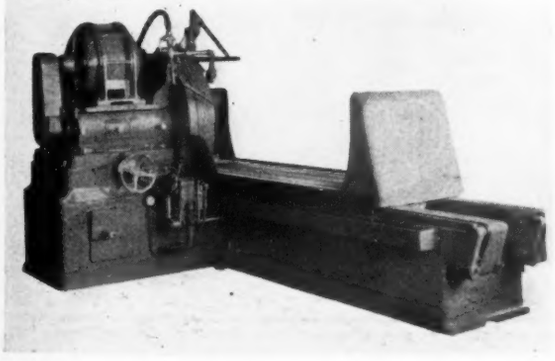
The platen is reciprocated hydraulically by cylinder and piston mechanism, its standard speed range being from 0 to 90 feet per minute. By special construction, this range can be increased to 160 feet per minute. A standard constant flow hydraulic pump of gear type, is mounted on a separate plate so that it readily can be removed from the machine bed. This unit is driven by a 7½-horsepower motor.

Provisions for Loading

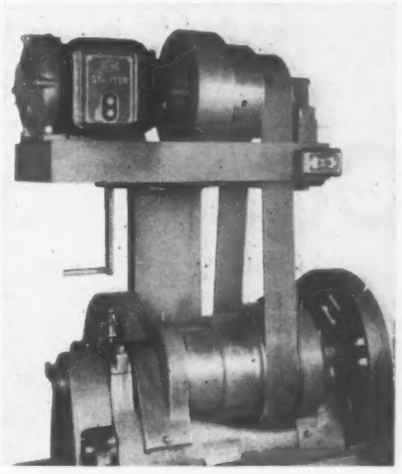
Besides the convenient levers for starting, stopping and instantly reversing the platen, a foot pedal in easy operating position by-passes the reversing dogs and runs the platen to the safety dogs for convenient loading, unloading and inspecting of the work. The grinding head also is connected hydraulically so that forward travel of the wheel toward the work can be set to a predetermined stop, as well as providing automatic feed ranging from 0.00025 to 0.005 inches per pass. Independent hand cross feed also is supplied.

Heavy fabric composition belts are connected to each end of the platen, pass over adjustable pulleys at the ends of the bed and return through the bed below the platen, thus protecting the ways from abrasive. Pressure oil lubrication is provided, the oil passing through a purifying device before being pumped back to ways and bearings. Widely spaced, generously proportioned ways are used and the bed is made long enough so that the platen never overhangs at either end.

These machines are built in various lengths, capacities ranging from 50 to 192 inches. One of 84-inch capacity occupies 18 x 7½ feet of floor space and its approximate weight, including motors, chuck, wheel and coolant system, is 18,500 pounds.



Face grinding machine with 36-inch wheel and hydraulically operated platen and belt - protected ways; built by Hanchett Mfg. Co.



Motorized countershaft unit developed by Production Equipment Co.

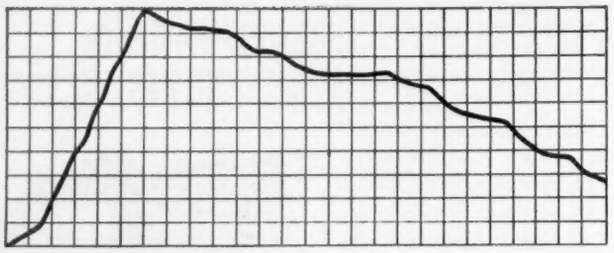
◆

Equipment Modernized by Motorized Countershafts

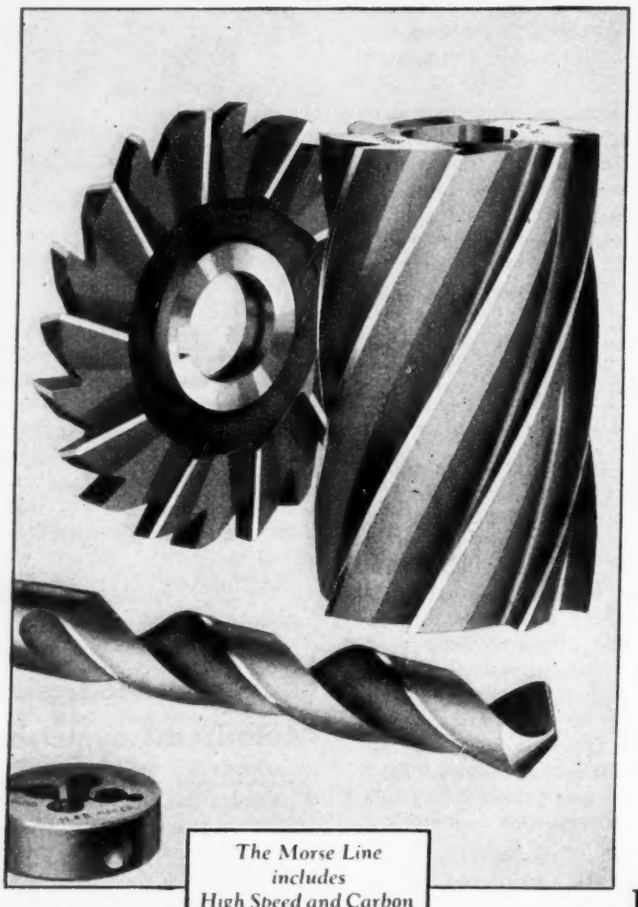
Production Equipment Co., 5219 Windsor avenue, Cleveland, has placed on the market a line of motorized countershafts designed to provide efficient individual motor drives to belt driven machine tools. The accompanying illustration shows one of these units with overhung-type base mounted on a 20-inch engine lathe, the supporting column being bolted to the rear of the bed. In this case the unit is hinged at the top to the rear of the countershaft base, and lever operated cams adjust the belt tension.

In addition to this overhung-type unit, which incidentally can be mounted with equal facility on such machines as universal millers, these motorized countershafts are built with box-type bases and with special bases for particular applications where standard types will not conform readily.

The drive is simple and compact, being fully enclosed and ball bearing equipped throughout. It consists of one of this company's motorized speed reducers with extended shaft and outboard bearing. On this shaft



Costs go up quickly -- come down slowly



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TWIST DRILL & MACHINE COMPANY

NEW BEDFORD, MASS., U.S.A.

the driving pulley is mounted, speed of this shaft being designed to duplicate the speed of the replaced belt drive countershaft. These units can be supplied in ratings from ½ to 20 horsepower, in single or multispeed designs, for reversing or nonreversing service, for single or cone pulley applications.

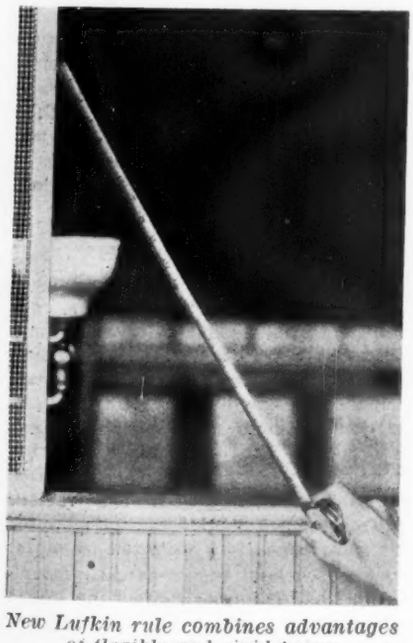
Among the advantages accruing from the use of these units, the manufacturer points out: Increased production; saving in power, saving in floor space; elimination of belt and pulley hazards; freedom of machine arrangement; unrestricted light; clearer headroom; and convenient, flexible machine control.

◆

Steel Rule, Rigid in Use, Coils Into Small Case

Lufkin Rule Co., Saginaw, Mich., has put on the market a combination tape and rule which coils up in a small case but at the same time forms a rigid straight rule when uncoiled. The accompanying illustration shows one of these measuring instruments in use.

The blade, which is of nickel-plated tempered steel stiffened by special forming, is 6 feet in length. It winds automatically into a sturdy chromium plated case only 2 inches in diameter. The blade is marked either in inches to sixteenths, or in feet to tenths and hundredths of feet. A solid clip at the end of the blade serves for withdrawing it from the case and also as a hook for taking measurements out of arm's reach. The case is equipped with a smooth working spring-winding device with ratchet stop.



New Lufkin rule combines advantages of flexible and rigid types

Positive Blade Control

Operation of the rule is simple, corresponding to that of any spring-wind pocket tape. It never is dangerous. The blade, being manually withdrawn and automatically returned, always is under control. It cannot fly out of the case at high speed in an unrestrained manner. Simple pressure on a push button recoils it into the case far more quickly than a jointed rule can be folded up.

In addition to its ability to project unsupported as a stiff rule, it also will flex around and accurately measure circular, round-cornered and other curved objects.

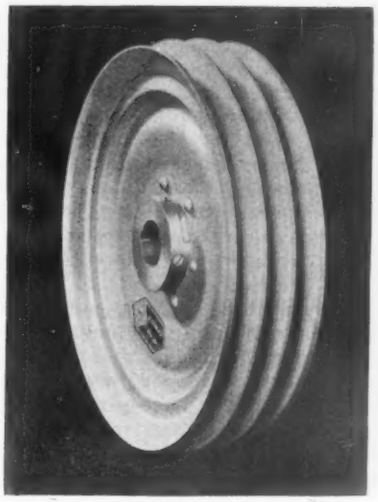
◆

Spot Welder Is Designed For Average Small Shops

Lenney Machine & Mfg. Co. Inc., Warren, O., has placed on the market a new light duty, light weight spot welder which sells at a low price. One of these machines is show in the accompanying illustration.

With its ability to weld continuously two pieces of 16-gage stock, or to weld intermittently two pieces of ⅛-inch stock, it covers practically the entire range of work encountered in the average small shop.

The machine is compact, requiring only 16 x 22 inches of floor space when equipped with a 12-inch throat. Equipment includes a 7½ kilovolt-ampere transformer with cast secondary and pancake coils, six-step regulation, swivel treadle and water cooled points.



Pressed steel V-belt sheave made by Allis-Chalmers Mfg. Co.

◆

Sheaves for V-Belts Are Welded Pressed Metal

Allis-Chalmers Mfg. Co., Milwaukee, has brought out a new type of pressed steel sheave for use in connection with multiple V-belt drives. One of these sheaves is shown in the accompanying illustration.

They are die pressed from tough steel, each section then being welded both at web and at rim to eliminate possibility of vibration and noise. The complete units are accurately balanced to insure true running.

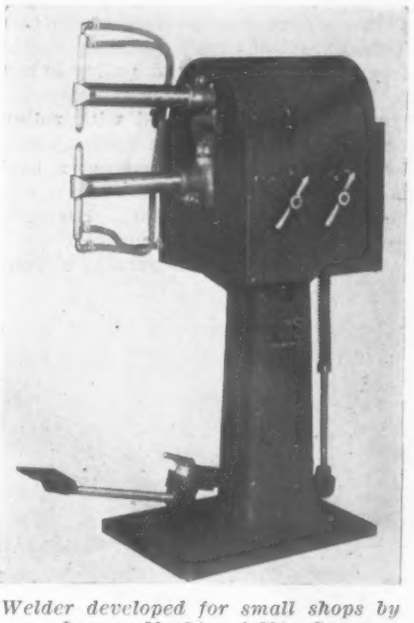
These pulleys are manufactured in a large range of diameters, permitting ratios as high as 6 to 1. They are finished with aluminum paint.

◆

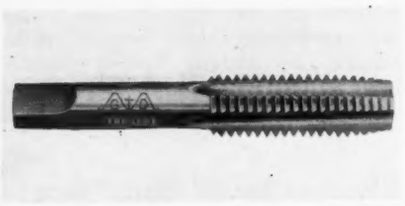
Hardfacing Materials Are Supplied in Several Forms

Armite Laboratories, 318 West Ninth street, Los Angeles, is marketing a group of hardfacing products for application to surfaces subject to wear and abrasion. These materials can be applied either by electric arc or by the oxyacetylene method.

Compounds, inserts and rods of several kinds are provided, including particles of 20-mesh and pieces ½-



Welder developed for small shops by Lenney Machine & Mfg. Co.



Tap featuring accurately ground thread made by Greenfield Tap & Die Corp.

inch in diameter, the latter for application to drilling bits, power shovel teeth and for other services where inserts are desirable to protect points and edges against heavy wear and abrasion.

One of the products is a tungsten carbide compound which can be applied direct to ordinary steel, or by special methods to manganese steel. This product, which ordinarily is applied with an electric arc, using a negative carbon electrode, is supplied either in granular form, or in the form of tubes.

The hardfacing rod developed by this company is of light weight and therefore will cover more surface per pound. This rod is made in three grades of hardness.

◆

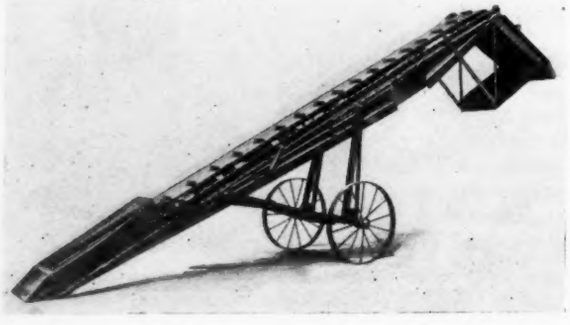
Portable Loading Machine Has Been Improved

Link-Belt Co., 910 South Michigan avenue, Chicago, announces improvements to its line of portable loading machines. One of these new machines, which is lighter by 100 pounds than its predecessor, is shown in operating position at the bottom of this column.

The machine is equipped with an 18-inch conveyor belt running on 21-foot centers. The head pulley being 9 inches in diameter. All-metal troughing rolls equipped with roller bearings are used. Shaft bearings are bronze bushed. Drive is from a ball bearing electric motor, through cut gears and a short chain. Pressure greasing is provided throughout.

For raising and lowering, a convenient crank operates a self-locking worm and wheel mechanism. Thus it is easy to change the height of the conveyor to suit either high or low trucks. The machine has a sharp pointed nose at the foot, an improved boot with belt guide serving to keep the belt lined up at all times. A substantial screen chute of large area can be furnished special, and hinged trough plates also can be provided.

The machine has a substantial channel frame and full length cover-over return run for the belt. The wheels are equipped with roller bearings, making it easy to shift the device from one location to another even under difficult operating conditions.



Portable loading machine improved by Link-Belt Co. to attain high resistance to wear, light weight and ready mobility

◆

Taps with Ground Threads Feature Accurate Lead

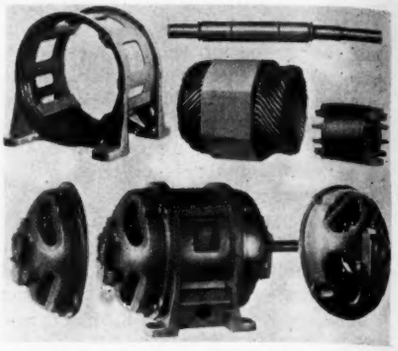
Greenfield Tap & Die Corp., Greenfield, Mass., announces a new line of high-speed steel taps with threads ground to precise form and lead after hardening. One of these taps is shown in the illustration which appears in the upper left hand corner of this page.

These taps are designed to insure unusual accuracy in production threading, thereby eliminating difficulties in the assembling of threaded parts. The line includes hand, machine screw and gun styles in all standard sizes and pitches. Lead tolerance of 0.0005-inch per inch of thread is claimed for this line of ground taps by the maker.

◆

Motors Are Assembled From Standardized Units

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces an important innovation in the design of certain of its squirrel cage induction motors, this consisting in making different parts of the motor as



Westinghouse interchangeable unit motor, together with its component parts

entirely separate units. The accompanying illustration shows one of these motors assembled and also the various standard separate units which go to make it up.

Under this plan, the company has only to keep a number of standardized parts in stock to be able to build on short notice a motor for any specific application. The new design makes maintenance simpler and less expensive, because damaged electrical parts can be replaced without replacing or rewinding the motor. The stator core containing its winding is pressed into the motor frame. When it becomes necessary to replace a damaged winding, the old core and its winding are pressed out as a unit by means of an ordinary arbor press and a new "pre-wound" core pressed in. The entire operation can be performed in less than one hour.

Like the stator core and its winding, the rotor also is a complete separate unit and both the rotor and the stator core and winding can be supplied as such for built-in motor or repair purposes. This feature makes it possible to vary the electrical characteristics, using the same set of mechanical parts and with a given set of electrical parts, the mechanical construction can be changed to attain almost numberless combinations.

Possible Combinations

Separate-frame construction makes it possible to supply any one of a number of different types of frames to meet the needs of the customer. The brackets are bolted to the frame with a ring-groove fit that automatically and permanently sets the air gap and aligns the bearings, simplifying reassembly. Some of the combinations obtainable with the various motor parts are: Vertically mounted or horizontally mounted motors; motors without feet, vertically mounted or flush mounted against the side of the machine; and open, semi-inclosed and totally-inclosed motors.

Steel Market Sentiment Picks Up

More Factors Point Toward Improvement in Fall—Industry Hopeful of Outcome in Rate Proposal—Operations Down to 38 Per Cent—Structural Demand Holds Up

STEELMAKING operations have receded two more points to 38 per cent this week, bookings from all major classes of consumers except the building industry have further diminished, seasonally there is no warrant for expecting improvement in demand or production over the next 60 days—yet sentiment in the steel industry is distinctly more buoyant.

While orders for structural steel are providing the only substantial comfort to mill order books at present, there are outcroppings of inquiry in other lines which may indicate better business in the fall. Nevertheless, for the lifting of much of the pessimism which has submerged the industry recently, intangibles are largely responsible.

Improved crop conditions, a conviction that prices and production are "bouncing off the bottom," the possibility that a speedy, successful conclusion to the railroads' campaign for higher freight rates might stiffen commodity prices, the emphasis being placed upon low inventories, and potentialities of a rapid reversal of the price situation—these factors influence sentiment.

Determination of sheet manufacturers to attempt more vigorously to put into effect the new classifications, in themselves constituting an advance in price, is a reflex of this better feeling. In fact, one large producer has superimposed these new classifications upon an advance in the base price, lifting some quotations as high as $5 a ton for third quarter.

These new levels, of course, face a test, but the decision to breast the tide in sheet prices is noteworthy. On other classes of steel including tin plate, wire products, plates, shapes and bars, bookings are being made for third quarter at unchanged prices, although formal announcements are not yet general.

Typical of activity in structural steel, bookings of the largest fabricator have been increasing month by month this year. Bids are now in on 103,000 tons for the Golden Gate bridge at San Francisco, and on 25,000 tons for the Louisville & Nashville bridge at Henderson, Ky. A 14,000-ton tower as part of Chicago's fair looms as a possibility. A 6100-ton bridge at Jersey City, N. J., will be up for bids June 29; a 3600-ton New York subway section, June 26. Fresh structural inquiry this week totals 34,698 tons, actual awards 24,174 tons. It is not volume but low prices that afflict fabricators.

A clarification of the production situation in the East Texas oil fields encourages Chicago plate mills to expect to book upward of 50,000 tons of tank plates late this summer. The Hetch Hetchy water pipe line, San Francisco, for which 40,000 tons were placed recently, is requiring 15,000 tons additional. Steel bars are constricted through unexpectedly severe retrenchment in automobile production, a situation reflected also in alloy steel, sheets and strip.

Increasingly, sentiment in the steel industry is inclined not to be obstructive to any effort of the railroads to rehabilitate themselves financially. The proposed 15 per cent advance in freight rates would raise assembly costs in producing a ton of steel as much as $2, which the steel industry does not expect to absorb. Granting of the advance might not immediately stimulate purchases of rolling stock, but should broaden requirements for repairs and maintenance.

Chicago Great Western has ordered 500 box cars. The Fruit Growers Express is inquiring for 800 underframes, while the Pacific Fruit Express may buy 800 to 1000 refrigerator cars.

Neither production nor prices of coal or coke have been affected by the sporadic coal strikes, and no danger is discerned. A substantial tonnage of steelmaking iron has been placed at Pittsburgh at a low price made possible by water shipment. Pig iron demand has fallen off. Scrap prices display more stability.

Rumors of mergers entailing acquisition of financially distressed companies by some of the stronger units of the industry are current.

STEEL's price composite is unchanged for the second consecutive week at $31.03.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (June 17, 1931)	**$31.03**
Last week (June 10, 1931)	**31.03**
One month ago (May, 1931)	**31.37**
Three months ago (March, 1931)	**31.66**
One year ago (June, 1930)	**33.53**
Ten years ago (June, 1921)	**41.87**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 17, 1931	May 1931	March 1931	June 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.76
Basic, valley	17.00	17.00	16.75	18.50
Basic, eastern del. eastern Pa.	17.00	17.00	17.31	18.75
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.01	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	18.40
*Southern No. 2, Birmingham	12.00	12.00	13.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.75	17.76	18.26	20.26
Malleable, valley	17.00	17.00	17.00	19.00
Malleable, Chicago	17.50	17.50	17.50	18.40
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.38	19.13
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.45	2.50	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.75	30.00	31.25
Sheet bars, open-hearth, Pitts.	29.00	29.75	30.00	31.25
Billets, open-hearth, Pittsburgh	29.00	30.00	30.00	31.25
Wire rods, Pittsburgh	35.00	35.00	36.00	36.00

	June 17, 1931	May 1931	March 1931	June 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.65	1.65	1.75
Steel bars, Chicago	1.70	1.75	1.70	1.85
Steel bars, Philadelphia	1.94	1.94	1.94	2.04
Iron bars, Chicago	1.70	1.80	1.70	1.90
Shapes, Pittsburgh	1.65	1.65	1.60	1.70
Shapes, Philadelphia	1.76	1.76	1.81	1.66
Shapes, Chicago	1.70	1.75	1.70	1.80
Tank plates, Pittsburgh	1.65	1.65	1.65	1.70
Tank plates, Philadelphia	1.85½	1.85½	1.80½	1.85½
Tank plates, Chicago	1.70	1.75	1.70	1.80
Sheets, blue anl., No. 13, Pitts.	2.00	2.00	2.05	2.15
Sheets, black, No. 24, Pitts.	2.15	2.25	2.35	2.55
Sheets, gal., No. 24, Pittsburgh	2.80	2.80	2.90	3.20
Sheets, black, No. 24, Chicago	2.40	2.40	2.50	2.70
Sheets, blue anl., No. 13, Chicago	2.15	2.15	2.20	2.30
Sheets, galvanized, No. 24, Chi.	2.95	2.95	3.05	3.35
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.80	1.90	1.90	2.15
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25
SCRAP				
Heavy melting steel, Pitts.	10.25	11.25	12.90	15.10
Heavy melting steel, eastern Pa.	9.00	9.50	10.50	13.28
Heavy melting steel, Chicago	8.50	8.65	9.75	12.05
No. 1 wrought, eastern Pa.	10.00	11.00	11.00	14.25
No. 1 wrought, Chicago	8.25	8.40	9.00	11.50
Rails for rolling, Chicago	11.00	11.15	12.00	14.55

Sheets

Higher Prices Now Being Quoted Under New Classification for Third Quarter—Demand Light

SHEET PRICES, PAGE 67

Pittsburgh—A few inquiries for third quarter sheets are appearing on which new prices are being quoted, but business has been insufficient to give the market a test. The usual prices quoted on such business are 2.40c for No. 24 gage hot rolled sheets, and 2.90c for galvanized. On spot business for shipment before July 1 mills continue to quote former prices of 2.15c to 2.25c for black sheets, 2.75c to 2.80c for galvanized, 1.85c and 2.00c for blue annealed, and 3.00c to 3.10c for autobody. Demand shows little change from most important consumers, with the exception of the automotive industry which continues to reduce its requirements gradually. Farm implement makers are placing little tonnage and demands of steel furniture makers are light. Mill operations remain about 35 to 40 per cent.

New York—Sheet sellers are announcing third quarter prices under the new classification, at 2.40c for black, 2.90c for galvanized, and 1.85c to 1.90c on No. 10 blue annealed. While certain sellers are quoting new prices effective immediately on new business, others designate June 30 as the limit on old prices.

Philadelphia—Bethlehem Steel Co. has named its prices under the new classification, effective June 15. No. 24 gage black sheets are 2.40c, base, Pittsburgh, an increase of $3 to $5 a ton over the general market under the former classification. Galvanized sheets are 2.90c, up about $3 a ton. No. 10 hot rolled, including annealing, are 1.90c, an increase of $1 a ton. Other mills are expected to announce their prices shortly. Meanwhile, under the old classification, galvanized sheets are offered to the general trade at 2.75c to 2.80c, Pittsburgh, and to larger jobbers at 2.70c. Black sheets are available at 2.15c to 2.25c, and blue annealed at 1.85c and 2.00c.

Buffalo—District sellers are said to have orders for thousands of tons on hand for shipment within the next 60 days on which duty probably will have to be paid under the new Canadian tariff. This tonnage had been sold with the understanding deliveries up to an August date would be duty free, and efforts are being made to adjust matters.

Youngstown, O.—Sheetmakers are determined to adhere to the new classifications and prices for third quarter. They are bookings business on this basis each week, not large, but sufficient to insure a considerable aggregate. Buyers of automotive sheets are inclined to be more liberal in forwarding specifications. Makers of common grades continue to operate intermittently. However, this week operating rates at independent mills are better, with additional units scheduled later in the week.

Cleveland—The new sheet classification has had little test and now gives promise that for several grades perhaps a time late in July will mark the transition. Specifications for single-pickled stock are being taken into July by several interests, though the change from single pickled to cold-rolled classification will be slower than to the new hot-rolled base, which latter may be expected to be effected by July 1. A substantial buyer is attempting to test the market with a large order for barrel stock. This may be placed within the week. Quotations of 2.80c Pittsburgh, galvanized ware not successful on orders placed last week. No. 10 blue annealed are 1.85c; black continue 2.15c to 2.25c. and No. 20 metal furniture, 3.35c.

Chicago—Black sheet prices will be advanced $3 a ton for third quarter, under the new classification. Galvanized and No. 10 blue annealed prices will be up $2 a ton. No. 13 blue annealed designation will be dropped after July 1 under the new plan which becomes general in this district at that time.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.15c to 2.25c
Philadelphia, delivered	2.44c to 2.54c
Gary, Indiana Harbor	2.35c
Chicago, delivered	2.40c
Birmingham, base	2.40c
St. Louis, del.	2.60½c
San Francisco, c.i.f.	3.00c

TIN MILL BLACK, No. 28

Pittsburgh, base	2.55c to 2.65c
Gary, base	2.65c to 2.75c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.80c
Philadelphia, delivered	3.04c to 3.09c
Chicago, delivered	2.95c
Gary, Indiana Harbor	2.90c
Birmingham, base	2.95c to 3.05c
St. Louis, del.	3.15½c
San Francisco, c.i.f.	3.50c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
St. Louis, delivered	2.40½c
Philadelphia, delivered	2.29c
Birmingham	2.15c to 2.20c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, delivered	2.14c
St. Louis, delivered	2.25½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

AUTOMOBILE NO. 20

Pittsburgh, base	3.00c to 3.10c

FURNITURE

No. 10, heavy, Pittsburgh	2.75c
No. 20, light, Pittsburgh	3.35c

New Classifications, Pitts. base:
Heavy cold-rolled No. 10, 2.35c; cold-rolled No. 20, 2.95c; hot-rolled No. 10, 1.70c; hot-rolled No. 24, 2.40c to 2.50c. Differentials of 10 and 15 cents, respectively, at Gary, Ind., and Chicago, del.

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.80-1.90, and 1.90
Cement coated nails	1.80-1.90, and 1.90
Galvanized nails	3.80-3.90, and 3.90

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

Steel Plates

Base, Pittsburgh	1.65c
Philadelphia, del.	1.85½c
New York, delivered	1.93c
Boston, delivered	2.05c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.80c to 1.85c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f	2.00c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.65c
Philadelphia, del.	1.76c
New York, del.	1.85½c to 1.90½c
Boston, del.	1.98½c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.80c to 1.85c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.65c
Chicago, base	1.70c to 1.80c
Birmingham base	1.80c to 1.85c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.70c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.94c
New York, del.	1.98c
Boston, del.	2.05c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c to 1.80c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c
Stock lengths, mill	1.60c to 1.65c
Chi., billet	1.85c to 2.00c
Chi., rail steel	1.50c to 1.65c
Chi., rail steel, less carload	1.90c
Philadelphia, cut lengths	2.19c
Cleveland, cut lengths	1.95c to 2.05c

Cold Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25		Carbon Van.	0.95
Mo.	0.50	9250 (flats)	0.25
4600 .20 to .30 Mo.		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c to 1.65c
Do, 6 6/16 to 24-in., Pitts.	1.50c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.70c to 1.75c
Do. 6 1/16 to 24 in.	1.60c to 1.70c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c to 2.25c
Worcester, 3 tons, over	2.40c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi.
Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., Pittsburgh	2.40c to 2.50c
Do, less carloads, 5 kegs or over,	2.65c to 2.75c; less than 5 kegs 2.80c to 2.90c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Most Demand for Spot Shipment and Third Quarter Price Not Announced—Buying Is Small

BAR PRICES, PAGE 67

Chicago—Bar mill production has receded from 50 to about 40 per cent, largely because of automotive decline. Road equipment, industrial machinery and miscellaneous manufacturing demand for hot and cold-rolled bars and bar shapes is equivalent to that of the last 30 days. Mills report fair forward inquiry, some of which includes requests for third-quarter prices. No formal price announcement is being made on bars, plates and shapes, but as some business extending into third quarter has been booked for designated work on the basis of 1.70c, Chicago, it is indicated mills will seek to maintain this price for such quarterly contracting as may appear soon. Specifications and sales show little change. Railroad shops take fewer shapes, but the outlook is more cheerful for railroad maintenance and repairs in view of the possibility of heavier freight revenues later in the summer. Alloy bars mills now operate at 40 per cent.

Philadelphia—Most carload steel bar tonnage is going at 1.65c, Pittsburgh, with prospects of reaffirming of this figure for third quarter. Demand is slack. Common iron bars are 1.60c to 1.70c.

Pittsburgh—Steel bar producers have no formal announcement regarding third quarter prices, but are quoting 1.65c, Pittsburgh, on business now appearing for that period. More orders are on a spot basis and only a few inquiries are appearing for third quarter tonnage. On undesirable specifications mills are naming 1.70c, but this quotation applies on only a small proportion of going business. Specifications are fairly steady but are off slightly from the rate of a month ago, still being influenced by moderating automotive requirements.

Cleveland—Specifications of the past week have failed to show tendency toward gains, with a turn for the better in customers' sentiment. Sales thus far for June are below the May level. Price announcement is deferred for third quarter, leaving the market currently quotable at 1.70c, Cleveland local; 1.65c, outside.

Cold-Finished Inquiry Light for Third Quarter

Cold Finished Prices, Page 67

Pittsburgh—Producers of cold-finished steel bars are continuing present prices on what few inquiries are appearing for third-quarter tonnage. Interest in future requirements is light. The market continues fairly steady at 2.10c, Pittsburgh. Specifications still are declining and prospects are poor for any improvement in demand over the next four to six weeks, particularly in view of declining operations in the automotive industry.

Cleveland—Announcement of a third quarter price still is lacking. The 2.10c, Cleveland, base, is nominally unchanged. Cold-finished bessemer screw stock analysis now generally conforms with the new analysis for S. A. E. 1112 recently adopted by the Society of Automotive Engineers. Carbon is held to a narrower range at 0.08 to 0.16; manganese content is 0.60 to 0.90; phosphorus is now 0.09 to 0.13; and sulphur content, 0.10 to 0.18.

Plates

Prices Extended Into Third Quarter—50,000 Tons for East Texas Field Nearing Active

PLATE PRICES, PAGE 67

Chicago—Progress in gradually dividing the East Texas oil production area into small prorating units is believed opening the way for about 50,000 tons of plate tank inquiry, bunt this may not become active until late summer. Plates are quoted 1.70c, Chicago, base, and this price is expected to extend into third quarter. Plate specifications show little change, but mill operations have been reduced below 45 per cent. Moderate third quarter inquiry appears, largely from miscellaneous manufacturers, covering actual prospective work. About 10,000 tons for municipal water tanks at Indianapolis, Milwaukee and Detroit have been specified.

Philadelphia—Plate sellers are expected to reaffirm 1.75c, base, Coatesville, Pa., for carload shipments in the third quarter. A leading mill continues to operate at 40 per cent. A 600-foot jetty at Long Branch, N. J., will require 180 tons of sheet piling. A hoisting derrick barge for the Pennsylvania railroad may take 200 tons of plates, shapes and bars. The Norfolk & Western will open bids June 26 on third quarter requirements of plates, shapes and bars, approximating 2500 tons, and the Atlantic Coast Line will open bids June 23 on an unstated tonnage of plates.

Pittsburgh—Plate prices are being continued on third quarter business. Formal announcement is lacking, but 1.65c generally is being named on inquiries for third quarter shipment. More than 15,000 tons of plates and shapes are required in pending barge business, although awards are light and closing on some inquiry that appeared recently is being deferred indefinitely. Specifications continue small, and little changed from the volume of recent weeks.

New York—While there has been some formal inquiry for third quarter plate prices, producers have not yet committed themselves, although it is believed the present price of 1.75c, base, Coatesville, Pa., on carlots will be extended. A leading oil interest is sounding out the market on second half delivery. One thousand tons for a Lancaster, Pa., standpipe are reported placed. The McClintic-Marshall Corp. was low bidder.

Cleveland—Plate orders are fair to poor, with prospects of continued dullness in demand. Some business is coming from several steam shovel makers, one of which at Lorain, O., is operating virtually at capacity. A local boiler shop is working night and day, mainly on refining and oil-cracking equipment. Road machinery manufacturers' needs are declining. The 1.65c, Pittsburgh base, price is fairly firm. No announcement has been made to the general consumer classes on third-quarter prices, and the latter have shown little interest.

Contracts Placed

2000 tons, corrugated culvert pipe for federal and Oregon state highway projects, divided between Beall Pipe & Tank Co. and Pure Iron Culvert & Mfg. Co., Portland, Oreg.

650 tons, digesters and other equipment for Weyerheuser pulp mill project at Longview, Wash., to Willamette Iron & Steel Works, Portland, Oreg.

300 tons, bins and tanks for Philadelphia Quartz Co., South Gate, Calif., 250 tons to Consolidated Steel Corp., Los Angeles, and 50 tons to Western Pipe & Steel Co., Los Angeles.

Railroads

Chicago Great Western Places 500 Cars—Most Carriers Open Needs for Third Quarter

TRACK MATERIAL PRICES, PAGE 67

Chicago—Chicago Great Western has placed 500 50-ton box cars with the Pullman Car & Mfg. Corp., Chicago. Pacific Fruit Express is reported inquiring soon for 800 to 1000 refrigerator cars. Bids for 800 underframes for Fruit Growers' Express, scheduled for submission by June 17, have been extended. This order will use about 10,000 tons of finished steel axles. Bids have gone in for four to six helium gas tank cars for the United States navy department. Chicago department of public works has taken bids for 400 2-yard tunnel car bodies for the Chicago avenue tunnel.

Possibility of relief from the railroads' stringent economies in track maintenance work and rolling stock purchases are seen in the possible blanket freight rate advances. Some views are that almost immediate buying on the part of the railroads should develop in the event of favorable action by the interstate commerce commission. Rail mill operations have been reduced to about 30 per cent, as the season's trackage shipping program is nearing a close. Several of the roads will not specify their contracts in full at this time. Track fastenings sales now are averaging 500 to 800 tons weekly. Chicago, Burlington & Quincy railroad is ready to begin construction of its new 120-mile line in the Texas Panhandle, as soon as acquisition of right-of-way is completed, probably in about three weeks.

New York—Several eastern railroads are inquiring for third-quarter and last-half requirements of steel wheels and axles, including the New York Central and Delaware, Lackawanna & Western. Bids close June 29 on wheels for the New York Central. Delaware, Lackawanna & Western closes July 1 on second-half needs on freight car, passenger coach, locomotive tender, trailer, engineer truck and locomotive driving axles.

Board of Transportation is inquiring for rails, frogs and switches for several subway sections in the Bronx, including the Grand Concourse route, bids closing June 23 under two contracts, 58 and 59.

Norfolk & Western takes bids July 1 for third-quarter needs of steel locomotive tires. The same road opens bids June 26 for third-quarter requirements of plates, shapes and bars, approximating 2500 tons. Atlantic Coast Line takes bids June 23 for an unstated tonnage of plates, shapes, bars and nails. Pennsylvania railroad may take 200 tons of plates, shapes and bars for a hoisting derrick barge.

Philadelphia—Department of city transit has awarded a $60,000 contract for frogs and switches to the Lorain Steel Co., Johnstown, Pa. Bethlehem Steel Co., Bethlehem, Pa., has been awarded 430 tons of rails and 36,200 screw spikes with splice bars and track bolts by the same department.

Pittsburgh—Railroad demand is dull with a number of third-quarter inquiries yet to be closed. Rail mill operations also are quiet. Carnegie Steel Co. has started rolling of the new 152-pound section rail for the Pennsylvania railroad.

Pittsburgh & Lake Erie railroad is inquiring for second half requirements of axles and steel tubes, bids to be opened June 26, Terminal building, Pittsburgh.

Cleveland—Carriers continue to use appropriations from 1930 budgets for operating maintenance, but new construction and sizeable purchasing is conspicuously absent. Car purchasing is obviated by present empty cars. Some activity is continued in frog and switch releases.

Chesapeake & Ohio has closed all its car and locomotive repair shops with the exception of the Fulton shop, Richmond, Va., for a three week period, beginning June 13.

Car Orders Placed

Chicago Great Western, 500 50-ton box cars, to Pullman Car & Mfg. Corp., Chicago.

Locomotives Placed

Albany, N. Y., port district commission, two gasoline-electric locomotives, to Mid-West Locomotive Co., Cincinnati.

Rail Orders Placed

Department of city transit, Philadelphia, 430 tons, to Bethlehem Steel Co., Bethlehem, Pa. Included also are 36,200 screw spikes with splice bars and track bolts.

Car Orders Pending

Chicago department of public works, 400 2-yard tunnel car bodies for Chicago avenue tunnel.

Fruit Growers' Express, 800 underframes.

Pacific Fruit Express, 800 to 1000 refrigerator cars; inquiry expected soon.

United States navy department, four to six helium gas tank cars.

Semifinished Prices Easy; New Orders Light

Semifinished Prices, Page 78

Pittsburgh—Shipments of semifinished steel show little change but requirements of finishing mills are at a low ebb. New business also is light with producers continuing to quote $30, Pittsburgh, for billets, sheet bars and slabs. The market remains rather nominal at this level with some tonnage sold at less. Forging billets are $35 to $36 and wire rods $35.

Philadelphia—Rerolling billets are nominally $29, Pittsburgh, and forging quality, $35.

Youngstown, O.—Limited lots of billets and sheet bars continue to move intermittently to nonintegrated mills in this district, smaller now in the aggregate than a month ago. Billets are held at $30, Youngstown, and sheet bars at $29 to $30.

Wire Strand Contracts Let For Flood Control Work

Memphis, Tenn.—Black Wire Rope Co., Peoria, Ill., has been awarded contract for 650,000 pounds ½-inch galvanized wire strand for the U. S. engineer, McCall building, Memphis, on a bid of $21,905 or $3.37 per hundred pounds, delivery f. o. b. cars, Peoria, Ill. Pigeon-Thomas Iron Co. was awarded 750,000 pounds ⅜-inch on a bid of $22,875 or $3.05 per hundred pounds f. o. b. cars, aukegan, Ill. Broderick & Bascom Rope Co., St. Louis, was awarded 350,000 pounds of 5/16 and ¼-inch on a bid of $3890 for 100,000 pounds 5/16-inch and $11,175 on 250,000 pounds ¼-inch or $3.89 and $4.47 per hundred pounds, f. o. b. government spur track, Memphis.

There were seven bidders, others being Williamsport Wire Rope Co., Page Steel & Wire Co., Macwhyte Co., and Woodward Wight & Co., Ltd.

The total contract for this material totals $59,845, against an estimate of $60,000. Strand will be used under the appropriation for flood control, Mississippi river.

Locomotive Crane Is Let

New York — Ohio Locomotive Crane Co., Bucyrus, O., has been awarded one 30-ton gasoline locomotive crane for the Edgewood arsenal.

Structural Shapes

Awards of 24,174 Tons Topped by 6000-Ton Office Building — Eastern Mills Booked Up for June—Fresh Building Brightens at New York—34,698 Tons Pending

STRUCTURAL SHAPE PRICES, PAGE 67

New York — Fresh building has brightened the market outlook for structural steel. Bids go in on 3600 tons of shapes for a subway section for Jamaica, Queens, the first contract to be placed this year. For an additional section for the Jersey City viaduct 6100 tons are on inquiry. Railroads are also in the market for structurals, the Pennsylvania for 1370 tons and the New York Central for second half requirements of shapes, plates and bars. State, federal and city work, pending for some time, is approaching the active stage with general contracts placed in most instances. Awards are slightly more numerous, but generally for lots under 500 tons. Prices are steadier.

An office building and bank has also been let, 6000 tons.

Boston — Nearly 2500 tons of shapes are pending. Included is 1500 tons for a war memorial building, Worcester, Mass., and 500 tons for an addition to the courthouse, Providence, R. I.

Buffalo—It is believed a large portion, if not all, the sections for the 25,000 ton structural order booked by Bethlehem Steel Co. for the Marshal Field estate building, Chicago, will be produced at Lackawanna.

Philadelphia — Leading structural inquiry is 1500 tons for Reading railroad grade elimination in Germantown, Pa., bids for which will go in June 22. Pennsylvania opens bids June 22 on 1300 tons of punch channels and plates for electrification work. United Engineers & Contractors Inc. opened bids June 16 for erecting 19,000 tons for the Pennsylvania Thirtieth street station, previously noted as fabricated by American Bridge Co. Shapes are easy at 1.76c, Philadelphia.

Pittsburgh—Shape producers are quoting 1.65c, Pittsburgh, on third-quarter inquiries although new business is providing little test. Specifications are fairly steady but light. Bids are due shortly on the South Tenth street bridge, requiring 5000 tons.

Cleveland—Structural shapes going into building work are slow with a reported absence this week in work of sizeable nature. Price at 1.65c, Pittsburgh, seems fair to firm for plain material though fabricated bids continue extremely low. The 1800-ton American Multigraph Co. job locally is still pending. The garage at Toledo, O., for 400 tons has been revived. More state bridgework goes in June 23.

Chicago — Structural mills are maintaining 40 per cent operation, largely on the steady but small flow of bridge and public works jobs. Shape awards total 3000 tons. The extended base price of 1.70c, Chicago, continues to be quoted into third quarter on specific work, although no formal announcement has been made. An exhibition building with a 1600-foot tower, 14,000 tons, is being projected as a part of the Century of Progress exposition in Chicago, contingent upon authorization by the Illinois legislature for the South park board to acquire the structure eventually as a permanent municipal exposition building.

Birmingham, Ala.—Louisiana road department has four bridge projects on which bids are being received this month, to use 5608 tons structural and 1961 tons reinforcing bars. Southern Steel Works Co. has 300 tons for library at Tuskegee, Ala.

Contracts Placed

6000 tons, 48-story bank and office building, Continental Realty Corp., 30-40 Board street, New York, to American Bridge Co., Pittsburgh; Thompson-Starrett Co., contractors.

2200 tons, hotel, Oklahoma City, Okla., to McClintic-Marshall Corp., Bethlehem, Pa.

1745 tons, courthouse, Union county, N. J., to Oltmer Iron Works, Hoboken, N. J.

1712 tons, Montalvo bridge over Santa Clara river, Calif., to Consolidated Steel Corp., Los Angeles.

1700 tons, welding plant for Western Electric Co., Chicago, to Midland Structural Steel Co., Chicago.

1000 tons, Garland court substation for Commonwealth Edison Co., Chicago, to American Bridge Co., Pittsburgh.

775 tons, high school, Yonkers, N. Y., to George J. Schnatz Iron Works, Bronx, N. Y., previously reported as going to unstated fabricator.

570 tons, bridge over Deal lake, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

500 tons, bridge over Calumet Sag canal, Blue Island, Ill., to Milwaukee Bridge Co., Milwaukee.

500 tons, public school 118, 191st street and 110th road, Hollis, Queens, N. Y., to Easton Structural Steel Co., Easton, Pa.; Wilaka Construction Co., contractor.

500 tons, strengthening bridges, Norfolk & Western railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

500 tons, bridge, Grand Island, Nebr., to Paxton & Vierling Iron Works, Omaha, Nebr.

470 tons, Newburgh state armory, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

400 tons, addition, public school 117, 143rd street and 84th drive, Jamaica, Queens, N. Y., to Easton Structural Steel Co., Easton, Pa.

370 tons, towers for Public Service Electric & Gas Co., New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

303 tons, steel (270), aluminum (33), conservatory, Botanic garden, Washington, to Wheeling Structural Steel Co., Wheeling, W. Va.; George A. Fuller Co., Washington, general contractor; 50 tons reinforcing bars pending.

300 tons, office building, Eagle Fire Insurance Co., Newark, N. J., to Albert Smith & Sons Inc., Newark; E. M. Walden Inc., contractor.

300 tons, Tuskegee institute, Tuskegee, Ala., to Southern Steel Works Co., Birmingham, Ala., through T. C. Windham Co.

300 tons, four small bridges, Oregon highway projects, to Pacific Iron Works, Portland, Oreg.

275 tons, Wolf river bridge, Shawano, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

270 tons, steel shoring for Queen's anchorage, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

260 tons, lock gates, Lock No. 4, Monongahela river, Pa., to Independent Bridge Co., Pittsburgh.

260 tons, overhead bridge, Ft. Crook, Nebr., to Omaha Steel Co., Omaha, Nebr.

250 tons, grandstand bleachers, state fair grounds, Minneapolis, Minn., to American Bridge Co., Pittsburgh.

250 tons, highway bridge, Shawano, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

250 tons, bridge, Erie railroad, to American Bridge Co., Pittsburgh.

250 tons, state bridge over Coos bay, Marshfield, Oreg., to Pacific Iron Works, Portland, Oreg. Previously reported at 100 tons or more.

250 tons, platforms and canopies for Chicago, Milwaukee, St. Paul & Pacific railroad station, Evanston, Ill., to unstated company.

245 tons, West Baltimore Colored school, West Baltimore, Md., to American Bridge Co., Pittsburgh.

233 tons, bridges over Dry creek and Puerco creek, Apache county, Arizona, unstated company.

228 tons, Baltimore & Ohio railroad bridge, North Dayton, O., to McClintic-Marshall Corp., Bethlehem, Pa.

220 tons, Hellgate bridge federal project, Lane county, Oregon, to Poole

Awards Compared

	Tons
Awards this week	24,174
Awards last week	61,284
Awards two weeks ago	26,704
Awards this week in 1930	34,413
Av. weekly awards, 1930	35,242
Av. weekly awards, 1931	37,107
Av. weekly awards, May	23,457
Total awards to date, 1930	859,794
Total awards to date, 1931	964,787

& McGonigle, Portland, through Lindstrom & Feigenson, general contractors, Portland.
210 tons, office building, Hartford, Conn., to Palmer Steel Co., Springfield, Mass.
200 tons, state highway bridge, New York, to American Bridge Co., Pittsburgh.
191 tons, state bridge, Irving, Mass., to unnamed fabricator.
170 tons, DeKalb street bridge, Norristown, Pa., for Reading railroad, to McClintic-Marshall Corp., Bethlehem, Pa.
164 tons, shapes and bar joists (35), warehouse, Bloch Bros. Tobacco Co., Washington, Pa., to Wheeling Structural Steel Co., Wheeling, W. Va.; J. L. Ernest, Wheeling, general contractor.
160 tons, highway bridge, Superior county, Nebr., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
160 tons, I-beam spans, Nebraska, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
150 tons, forms, angle clips and pins, United States engineer, Memphis, Tenn., to Truscon Steel Co., Youngstown, O.
130 tons, bridges, for South Carolina state highway department, to Austin Bros. Bridge Co., Atlanta, Ga.
115 tons, alterations to building, Albany, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.
113 tons, buckle plates for Rhode Island dam, to McClintic-Marshall Corp., Bethlehem, Pa.

Contracts Pending

6100 tons, bridge with ramp connections route 25, connecting link, section 1, and route 25, section 3, Jersey City, N. J.; bids for furnishing and erecting steel, June 29, New Jersey State Highway commission, Trenton, N. J., A. Lee Grover, chief clerk.
3700 tons, highway bridge, Marco, La.
3600 tons, subway, route 108, section 9A, Jamaica section, New York, from Hillside Avenue to Ninety-fourth Street; bids June 26, Board of Transportation, New York.
2400 tons, Illinois highway bridge; bids June 16.
1500 tons, war memorial building, Worcester, Mass.
1500 tons, grade elimination work, Chestnut Hill, Pa., for Reading railroad.
1390 tons, channels, cross beams, bearing plates, Pennsylvania railroad; bids June 23.
1300 tons, punch channels and plates for Pennsylvania railroad electrification work; bids opened June 22, Philadelphia.
1200 tons, municipal auditorium, Worcester, Mass.
1000 tons, courthouse, Providence, R. I.
1000 tons, generation house, Hunts Point, N. Y.
1000 tons, building, Consolidated Gas Co., New York.
800 tons, bridge, Peekskill, N. Y.
650 tons, viaduct, Oklahoma City, Okla.
540 tons, bridge over Calumet river at Halsted street, Chicago.
500 tons, powerhouse, Kearny, N. J.
500 tons, addition to court house, Providence, R. I.
500 tons, Y. M. C. A., Harrisburg, Pa.
500 tons, school remodeling and repairs for Chicago board of education, Chicago.
400 tons, bridge, New York Central railroad, Woodlawn, N. Y.
400 tons, building for Polish Women's alliance, Chicago.
365 tons, Lake street grade separation, North avenue, Chicago.
300 tons, bridge for Minnesota highway commission.
290 tons, to be furnished by bureau of reclamation, Washington, for Cle Elum dam, Yakima, Wash., general contract bids July 10.
200 tons, repairs to four municipal bridges, Buffalo; bids being taken.
200 tons, McGreesh apartments, West Philadelphia, Pa.
175 tons, grandstand, Los Angeles county fair ground. Consolidated Steel Corp., Los Angeles, low.
160 tons, school house, Everett, Mass.
120 tons, academy, Watertown, Mass.
108 tons, Mahoning road bridge, Canton, O.; bids go in June 17.
100 tons, storehouse, Panama canal; American Car & Foundry Co., New York, low.
100 tons, cell houses, reformatory, Washington; Frank M. Weaver & Co., Inc., Lansdale, Pa., low.
100 tons, bridge, Hinsdale, Mass.
100 tons, International Harvester Co. distributing plant, Brighton, Mass.
Unstated tonnage, tentatively 2000 tons, second half requirements, shapes, plates and bars, New York Central railroad; bids June 29.

Concrete Bars

Prices Give Indication of Being Continued for Third Quarter—Awards Are 3885 Tons, Smallest in Six Weeks —Pending Total Dwindles —Plant Largest Award

REINFORCING BAR PRICES, PAGE 67

New York—Sewers account for the bulk of fresh concrete reinforcing bar inquiry, more than 1000 tons being included for such work in Brooklyn and Manhattan. Several hundred tons are included in fresh inquiry for New Jersey. A fair tonnage remains to be placed for highway work in that state on which general contracts have been awarded. Prices are fairly steady on small lots. Several hundred tons are reported placed for a Jersey City garage.

Boston—About 500 tons of concrete bars were contracted for in the past week, 150 tons of which was distributed in small tonnages for various projects. The only round tonnage was 350 tons for the laboratory for Massachusetts Institute of Technology, awarded to Kalman Steel Co. For a bridge, Chicopee, Mass., 380 tons will be required.

Philadelphia—Reinforcing bars are easy at 1.55c to 1.60c, Pittsburgh, with some shading of $1 a ton.

Buffalo—Reinforcing bar demand continues of only fair proportions. Large deliveries of welded mesh continue for road construction.

Pittsburgh—Concrete bar demand is steady. Inquiry calls for small lots but awards are fairly well maintained. Current prices are being continued into third quarter.

Cleveland—Award is awaited on two state bridges, one at Wickliffe and the other at Ravenna, O. The Warrensville, O., tuberculosis sanitarium, 200 tons, is still pending. Actual awards of consequence are conspicuously absent.

Chicago—Reinforcing bar activity is slowing down due to delayed purchases by general contractors. Billet bar prices are based more generally on 1.85c, 2.00c applying usually for less-carload orders. About 680 tons for the Western Electric Co. welding has been awarded. A local packing company will place 500 tons for a St. Paul plant. About 1000 tons of Illinois road work also remains to be distributed among fabricators.

Awards Compared

	Tons
Awards this week	**3,885**
Awards last week	**6,645**
Awards two weeks ago	**9,040**
Awards this week in 1930	**10,525**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,775**
Av. weekly awards, May	**8,131**
Total awards to date, 1930	**179,519**
Total awards to date, 1931*	**176,154**

*Revised

Contracts Placed

680 tons, welding plant for Western Electric Co., Chicago, to unstated company.
360 tons, two apartments, Washington, to Rosslyn Steel & Concrete Co., Washington, through M. and H. Warren, Washington.
350 tons, Cambridge, Mass., Institute of Technology laboratory, Kalman Steel Co., Chicago.
290 tons, Camden, N. J., postoffice, to Buffalo Steel Co., Buffalo.
268 tons, Santa Clara river bridge, Ventura county, Calif., to unstated company.
260 tons, gas holder foundation, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.
200 tons, dam, Cumberland, Md., to unstated company.
180 tons, two apartments, Washington, to John J. Whitmore Contracting Co., Washington.
163 tons, Link river and Hellgate bridges, Oregon, to Mercer Steel Co., Portland, through Lindstrom & Feigenson, general contractors, Portland.

(*Concluded on Page 75*)

Strip

Shrinkage in Buying Continues and Production Is Less—New Classification Is Followed

STRIP PRICES, PAGE 67

Pittsburgh—Practically no third quarter business in hot strip is appearing and the $1 a ton advance announced for that period remains to be established. Recent specifications have declined and for some producers have been the smallest for the year to date. Demand from most automotive interests shows additional decreases, while orders from other users are smaller than a month ago. Shipments are being made against 1.50c and 1.60c orders for hot strip, with third quarter asking prices 1.55c and 1.65c. Cold strip continues 2.15c to 2.25c.

Philadelphia—Hot-rolled strip is quiet at 1.55c and 1.65c, Pittsburgh, subject to shading of $1 per ton. Cold-rolled is quoted at 2.15c, Pittsburgh.

Youngstown, O.—Strip mill operations show further sagging this week as new business continues slowly to appear even for limited lots, and books of producers are clearing off old orders. Producers here express determination to adhere firmly to the new classification system announced by the American Rolling Mill Co., for third quarter delivery. Some sales continue to be made every day or so in the new basis, which is lending encouragement to local mills that the system finally will prevail. Quotations are unchanged here, both for hot-rolled and cold-rolled strip.

Cleveland—A noticeable decline in demand for both hot and cold-rolled strip has been continued through the first two weeks of June, after a fair month in May. Needs from the automotive field have tapered remarkably and strip for building hardware, agricultural implements and barrels has declined to an apparent minimum. June is likely to show the lowest point in total sales for any month in many years. Third-quarter asking prices are being prepared by several interests and in the meantime the current figures on hot are fairly firm. Cold-rolled continues 2.15c to 2.25c, Cleveland. Local strip mill operations are at a minimum.

Operations Still Recede at Chicago, Cleveland, East

Youngstown, O.—Steel operations are unchanged at 42 per cent capacity. Finishing departments are slightly lower at 44 per cent. Sheet and pipe mill schedules are holding at last week's levels. Eleven blast furnaces in the district are active against 12 a week ago, of the 33 in the district. Leading companies in the valley show little change. Republic Steel production is on a 45 per cent basis. Carnegie Steel activity is at 45 while Sheet & Tube operations are unchanged at 33 per cent. Republic started its Niles sheet mills a day earlier than last week. Sharon Steel Hoop production at its three plants is maintaining an average of 50 per cent.

Philadelphia—Eastern ingot operations are at 35 to 36 per cent this week, against 37 a week ago. A leading mill is down two points to 41 per cent.

Buffalo—Fifteen open-hearth furnaces continue unchanged in production, representing 40 per cent capacity.

Pittsburgh — Ingot production holds around 40 per cent with blast furnace schedules lower at 17 active of 54 steelworks stacks. Sheet production continues 35 to 40; tin plate is lower at 65. Strip has dropped to 25 to 30 with pipe unchanged at 35 to 40.

Cleveland—Ingot operations are off six points this week to 38 per cent of capacity. This is the lowest since the second week in November 1930. Otis Steel Co. foundry, open-hearth and finishing departments are down; Corrigan McKinney Steel Co. continues with five of 14 open-hearths on, one of which is a large one. Only 13 of 34 total open hearths are active.

Chicago—Ingot production at 38 to 40 per cent is down two points and is the lowest since January 15. This is due largely to completion of the bulk of railroad needs, and falling off in automotive specifications. Finishing mills average about 40 per cent. Rail mill production has been further reduced to about 30 per cent.

Birmingham, Ala. — Ingot operations continue at 50 per cent. Eleven open-hearth furnaces are producing ingots.

Warehouse Base Prices Revised at Several Centers

Warehouse Prices, Page 89

Chicago—Most western warehouses announce sharp price reductions, effective at once. Plates and shapes are unchanged at 3.00c, base. Bars, bar shapes, bands, hoops and No. 10 blue annealed sheets are down $3, while galvanized sheets, black sheets, No. 18 gage and lighter, are reduced $5. Cold-rolled strip steel, dead soft stock, is down $10. Both 23 series and 31 series of cold-finished alloy steel are reduced $5.00. St. Louis warehouses are making similar reductions, and it is expected St. Paul prices also will be cut correspondingly.

Boston—Continued development of small projects continues to bring a fair amount of business for warehouse interests. Most tonnage runs from one to five tons.

New York—Volume of steel out of warehouse holds to the recent rate. Slight increase is noted by some jobbers in structural demand. Prices are unchanged and fairly firm.

Philadelphia—Warehouse trading is fairly steady at the restricted rate of the past six weeks.

Buffalo—Warehouses report steady trade. June is holding its own with the previous month of the quarter.

Detroit—Warehouse business in iron and steel is faithful to the seasonal trend. Orders are a little less numerous, and well diversified. Building steel is in little demand. Prices are unchanged.

Cleveland — Volume from store continues restricted, with orders invariably for small amounts. Prices are fairly firm. Warehouse price revisions at Cincinnati and Chicago have not been reflected here.

Cincinnati—Jobbers here have revised base prices on most items, made cutting extras conform with those recently adopted in other districts, and readjusted quantity differentals.

St. Louis—Demand for iron and steel goods from store continues moderately active, but unusually spotty in character. Warehousemen report some days being good, while others are productive of only indifferent business.

Ask Lighting Supply Bids

New York—Westchester County Park commission, Jay Downer chief engineer, will take bids June 29 for the construction of electric lighting on the Bronx parkway extension, Valhalla to Croton lake, Westchester county, approximately 12.54 miles, which will require 140,000 linear feet of armored parkway No. 8 single conductor cable. Additional material includes 1130 linear feet wrought iron conduit and 360 sets each of transformers, lighting fixtures, standard equipment and vaults.

Concrete Bars

(*Concluded from Page 71*)

162 tons, powerhouse, Public Service Corp., Burlington, N. J., to Joseph T. Ryerson & Son Inc., Chicago.

150 tons, Illinois road work, to Olney J. Dean Co., Chicago.

150 tons, Illinois road work, to Concrete Steel Co., Pittsburgh.

150 tons, highway section 11, Newark Junction, N. J., to Joseph T. Ryerson & Son Inc., Chicago.

150 tons bars, 70 tons structurals, storehouse, Branch River Wool Combing Co., North Smithfield, R. I., to unstated fabricators; Temple & Crane Inc., Boston, general contractor.

148 tons, highway work, San Joaquin county, Calif., to unstated company.

114 tons, undergrade crossing, San Mateo county, Calif., to unstated company.

110 tons, warehouse, Bloch Bros. Tobacco Co., Washington, Pa., to Wheeling Structural Steel Co., Wheeling, W. Va.; J. L. Ernest, Wheeling, general contractor.

Contracts Pending

3550 tons, building, Twelfth and Washington avenues, St. Louis, for Illinois Terminal Warehouse Co.; Selden-Breck Construction Co., St. Louis, low on general contract.

1950 tons, to be furnished by bureau of reclamation, Washington, for Cle Elum dam, Yakima, Wash.; general contract bids July 10. Work also includes 150 tons sheet piling and 3800 feet 6 to 30-inch metal drain pipe.

1000 tons, postoffice, Louisville, Ky.; date for closing of bids indefinite.

1000 tons, Illinois road work; bids June 16.

380 tons, Chicopee, Mass., city bridge over Chicopee river, bids closed June 11.

240 tons, highway work, Colusa county, Calif., bids received.

200 tons, subway, route 108, section 9A, Jamaica section, New York, from Hillside Avenue to Ninety-fourth Street; bids June 26, Board of Transportation, New York.

200 tons, highway, route S-31, section 2, Newton to Ross' corner, Sussex county, N. J.; bids June 30, New Jersey state highway commission, Trenton, N. J.; A. Lee Grover, chief lerk.

200 tons, sewage disposal work, Highland Park, Ill.

150 tons, highway, route 42, section 6-A highway and bridges, Watering branch, Atlantic county, N. J., job also includes one 80-foot highway bridge and one 30-foot span stream bridge; bids June 29, New Jersey state highway commission, Trenton, N. J.; A. Lee Grover, chief clerk.

130 tons, highway, route S-3, section 2, Erie railroad (Allwood) to Hepburn road, Clifton, Passaic county, N. J.; bids June 29, New Jersey state highway commission, Trenton, N. J.; A. Lee Grover, chief clerk.

100 tons, bridge over Coyote creek, Santa Clara county, Calif.; bids July 1.

Unstated tonnage, express building as part of Union Terminal project, Cincinnati; bids by June 25.

Unstated tonnage, 5,000,000-gallon water reservoir for Hackensack Water Co., Weehawken, N. J.

Unstated tonnage, Marshall Field estate building, Chicago.

Shipments of deep-well water systems totaled 1063 units in March, compared with 1046 in February.

Allegheny Region Third Quarter Car Needs Down

Freight car requirements of shippers in the Allegheny region during the third quarter are estimated at 12 per cent less than a year ago.

The Allegheny region includes western Pennsylvania, eastern Ohio, northern West Virginia and part of Maryland.

Shippers forecast that 772,656 freight cars will be required to move commodities produced in the district during July, August and September compared with 76,894 cars a year ago. Shipments of iron and steel products are expected to decline 12.6 per cent while a decrease of 16.9 per cent is looked for in machinery and boilers, 20.8 per cent in sand and gravel and 21 per cent in cement.

Steel Man on Sherman Law

Inquiry into and revision of existing antitrust laws and other regulations of trade, to attain a more equitable position for both producer and consumer is advocated in an article in the June issue of the *Atlantic Monthly*, by James Harvey Williams, of J. H. Williams & Co., 75 Spring street, New York, manufacturer of drop forged specialties.

His subject is "The Reign of Error" with a subtitle "Are all Restraints of Trade Unsound?" After discussion of the present status of laws affecting trade in the United States he suggests a simple addition to the Sherman law defining the range of "restraint of trade," taking into account the interests of capital, labor and consumer.

Pennsylvania To Preserve Cornwall Stack Site

Harrisburg, Pa.—By act of the Pennsylvania legislature the Pennsylvania Historial commission will receive from Mrs. Margaret C. Buckingham the remains of the old Cornwall charcoal stack and 1 1/3 acres of ground. At the Cornwall stack, of which only the cast house remains, cannon and shot for the Revolutionary army were cast. The Bethlehem Steel Corp. for many years has owned most of the adjoining Cornwall ore mines. At one time it was thought that the ore was too rich and much of it was used for road building.

(See also STEEL for April 9, pages 21 and 26.)

Pipe

Small-Sized Orders Predominate as Line Tonnages Are Absent—Cast Prices Soft

PIPE PRICES, PAGE 89

Chicago—Cast pressure pipe inquiries contrast adversely with activity in April and May, due in part to tied-up tax funds of Illinois municipalities. Appleton, Wis., has awarded 400 tons of 6 to 12-inch, and Tippecanoe City, O., 200 tons of 4 to 8-inch. Bids for attractive municipal orders run as low as $40, delivered Chicago. Chicago board of public works is distributing 10,000 tons of 6, 8, and 12-inch pipe.

Boston — Small tonnages mostly for fill in purposes were placed during the week. Projects ahead are generally small.

New York—Fresh inquiry for cast iron pipe is largely limited to miscellaneous small tonnages, although attractive lots still pend at Schroon Lake and Ticonderoga, N. Y. A subway section eventually will take several hundred tons. Prices are weak. A fair tonnage for northern New Jersey went at $32.70 delivered.

Delaware, Lackawanna & Western railroad is inquiring for 1000 tons of wrought steel pipe. Bids are in on 2700 feet, steel, small sizes, for Mitchell Field. For a central steam heating plant at Washington, 403 tons have been placed with Midwest Piping & Supply Co., Ballwood division.

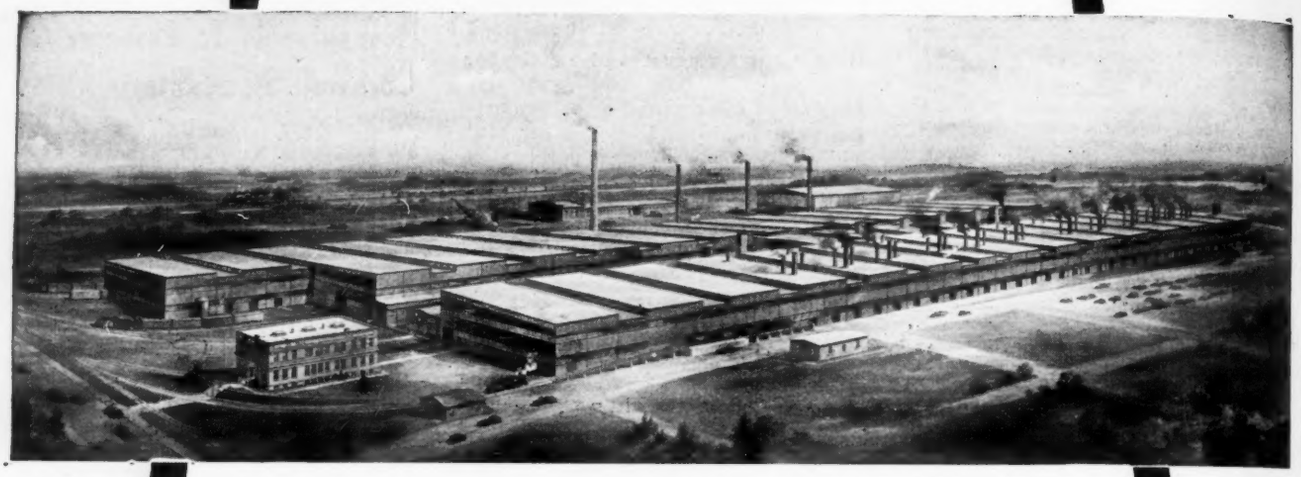
Pittsburgh—Incoming business in tubular products is made up mostly of small orders for smaller diameter material, line pipe continuing quiet in awards. A fair volume of business is pending in the latter. Standard pipe demand has improved but slightly over the past month.

Birmingham, Ala. — Production schedules are being maintained at 50 to 60 per cent of capacity, Centrifugal cast pipe predominates, being almost exclusively demanded. Little made-up stock is in yards of pipe shops.

Cast Pipe Placed

1150 tons, 4 to 12-inch class C pipe for village of Fox Point, Milwaukee

THE EASTERN ROLLING MILL CO.
Baltimore, Maryland



Save with Steel

EASTERN NORMITE SHEETS

Save with Steel

For your most difficult stamping operations, use NORMITE sheets.

Automobile Sheets

Deep Drawing and Extra Deep Drawing—
Hood and Fender Finish—Body Stock.

Metal Furniture Sheets

SHEETS

DISTRICT REPRESENTATIVES

DETROIT, MICHIGAN
Dean Higgins & Company
614 Free Press Building

CINCINNATI, OHIO
Dean Higgins & Company
Union Central Building

TOLEDO, OHIO
Dean Higgins & Company
906 Board of Trade Building

county, Wis., to Alabama Pipe Co., Birmingham, Ala., at $42.90 per ton for 4-inch and $39.90 for 6 to 12-inch.

550 tons, 6 to 10-inch, for Waddington, N. Y., to Universal Pipe & Foundry Co., Bessemer, Ala.; work also calls for erection of 200,000 gallon steel tank.

483 tons, 2-inch for Los Angeles; bids received.

400 tons, 6 to 12-inch, for Appleton, Wis., to James B. Clow & Sons, Chicago.

270 tons, various sizes, Watertown, Mass., arsenal, to Warren Foundry & Pipe Co.; valves to Kennedy Valve Mfg. Co.; special castings to Warren Foundry & Pipe Co.; hydrants, Chapman Valve Co.

233 tons, 6 to 18-inch class B or centrifugal pipe, Burbank, Calif.; bids June 16.

208 tons, 2 to 12-inch class 150 pipe, Fairfield, Calif.; bids June 18.

200 tons, 4 to 8-inch, for Tippecanoe City, O., awarded to unstated company through contractor.

150 tons, various sizes, St. Elizabeth's hospital, Washington, to Glamorgan Pipe & Foundry Co.

Steel Pipe Placed

403 tons, 6 to 14-inch steel pipe and 4 to 6-inch wrought iron, Capitol power plant steam distribution system, Washington, to Midwest Piping & Supply Co. Inc., New York, to be furnished by Ballwood division, Passaic, N. J.; Catalano & Pecora Construction Co., Baltimore, general contractors and engineers.

Unstated tonnage, connecting water line in northern Bergen county, New Jersey, by Hackensack Water Co., Co., Weehawken, N. J. This is in addition to 38,000 feet of 52-inch pipe already awarded.

Cast Pipe Pending

3200 feet, various sizes, eastern navy yards, bureau of yards and docks, Washington; Rudisill Foundry Co., Anniston, Ala., low.

3000 tons, 60-inch, department of water supply, New York; inquiry expected out in two months.

1000 tons, 36-inch, for Passaic Valley water commission, Paterson, N. J.; bids opened with alternate on concrete pipe.

300 tons, 6 to 20-inch for Jersey City, N. J.; bids in.

170 tons, 24-inch, for Akron, O.; bids in.

150 tons, 20-inch, department of water supply, New York, for installation in Bronx; bids June 23.

Steel Pipe Pending

2100 tons, 48-inch, department of water supply, New York, for installation in Bronx; bids June 23.

1000 tons, wrought steel pipe, second half requirements, Delaware, Lackawanna & Western railroad; bids July 3, purchasing agent, 90 West street, New York. Bids close same day on 10,000 to 20,000 locomotive boiler tubes, second-half needs.

900 feet, 8-inch, 26,500 feet of 6-inch, for LaConner, Wash.; bids opened June 18. W. C. Morse Co., Smith tower, Seattle, engineer. Work also included 18,315 feet of 4-inch cast iron pipe.

Wire

Interest Absent in Third Quarter Price and Contracts—Nails Are in Light Request

WIRE PRICES, PAGE 67

Chicago—While specifications and shipments in common wire products early this month dropped sharply below the April-May average, no further appreciable declines are noted. Recession in demand for manufacturers' wire is steadier and commensurate with declining automotive production. Occasional orders for nails are being booked on the basis of $1.85, Chicago or western mills, and sales of plain wire are being made at 2.25c. Manufacturers' wire for use other than automotive is nearly up to May, but this does not represent important business in single orders. Western wire mills are operating 30 to 35 per cent.

Worcester, Mass.—Wire production continues to sag under summer conditions. Prices are weak as for several weeks. The usual seasonal slump, however, is not exceeding expectations.

New York—Erie railroad will open bids June 18 and the Lehigh Valley railroad June 22 for third quarter requirements of nails. One independent producer has announced third quarter prices on nails at $1.80, Pittsburgh, to jobbers and $1.90 to the general trade, no change from current levels. It has reaffirmed the wire price at 2.20c, Pittsburgh.

Buffalo—Wireworks continue to operate at 75 per cent of their open-hearth capacity, a broad spring buying movement having been followed by continued good demand early this month.

Pittsburgh—Wire producers have little occasion to quote on third quarter inquiry, due to lack of interest on the part of consumers in future needs. On what requests are appearing for prices current quotations of $1.80 to $1.90 for wire nails and 2.20c for plain wire are being quoted. Incoming business continues to decline, currently being near the lowest level of the year. Activity in agricultural materials is dull and demand for manufacturers' wire reflects quiet in general industrial activity. Nails are moving slowly.

Cleveland—No interest has been displayed in third-quarter coverage on the part of consumers and producers have failed to make formal announcement regarding prices of wire products for that period. One seller has indicated that secopd-quarter asking prices of $2 a ton up will be revived for third quarter. Sales are currently small here, especially in nails. Plain wire is moving at a 2.20c minimum. The nail market has been made largely indeterminable at around $1.90 a keg.

Bolts, Nuts, Rivets Steady; Third Quarter Unchanged

Bolts, Nuts, Rivets Prices, Page 67

Pittsburgh — Specifications for bolts, nuts and rivets are fairly steady but lack improvement over the quiet rate of the past month. Third quarter contracts are being sent to consumers with prices continuing 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets. Operations remain 30 to 35 per cent.

Chicago—Buyers of bolts, nuts and rivets continue to sign third-quarter contracts on the basis of 73 off for bolts and nuts, but quarterly obligations are the lightest in several years, as a number of leading consumers have closed down operations. Bolt, nut and rivet manufacturers will be down for inventory the first ten days of July. Operations are 35 to 40 per cent

Tin Plate Booked for Second Half at $5

Tin Plate Prices, Page 67

Pittsburgh—Some contracts for tin plate for the second half have been signed at the recent $5 market and it now is regarded as unlikely that there will be any revision in the price at this time. Demand is moderating gradually, although recent specifications have been heavier since orders for August shipment now are due. Mill operations are slightly lower at close to 65 per cent with some additional reductions in sight for the near future.

New York—The leading producer of tin plate is reliably reported to be extending present prices for the second half.

Accumulation of locomotive repair work at its West Albany, N. Y., shops, has caused New York Central to recall 1700 workmen on a 5-day week basis.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	19.91 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00 to 13.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	17.00
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.75
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	9.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00 to 30.00
Pittsburgh, bessemer	29.00 to 30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00
Philadelphia	34.30
Chicago	30.00 to 31.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00 to 36.00
Forging, Philadelphia	40.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00 to 31.00

SLABS

Pittsburgh	29.00 to 30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

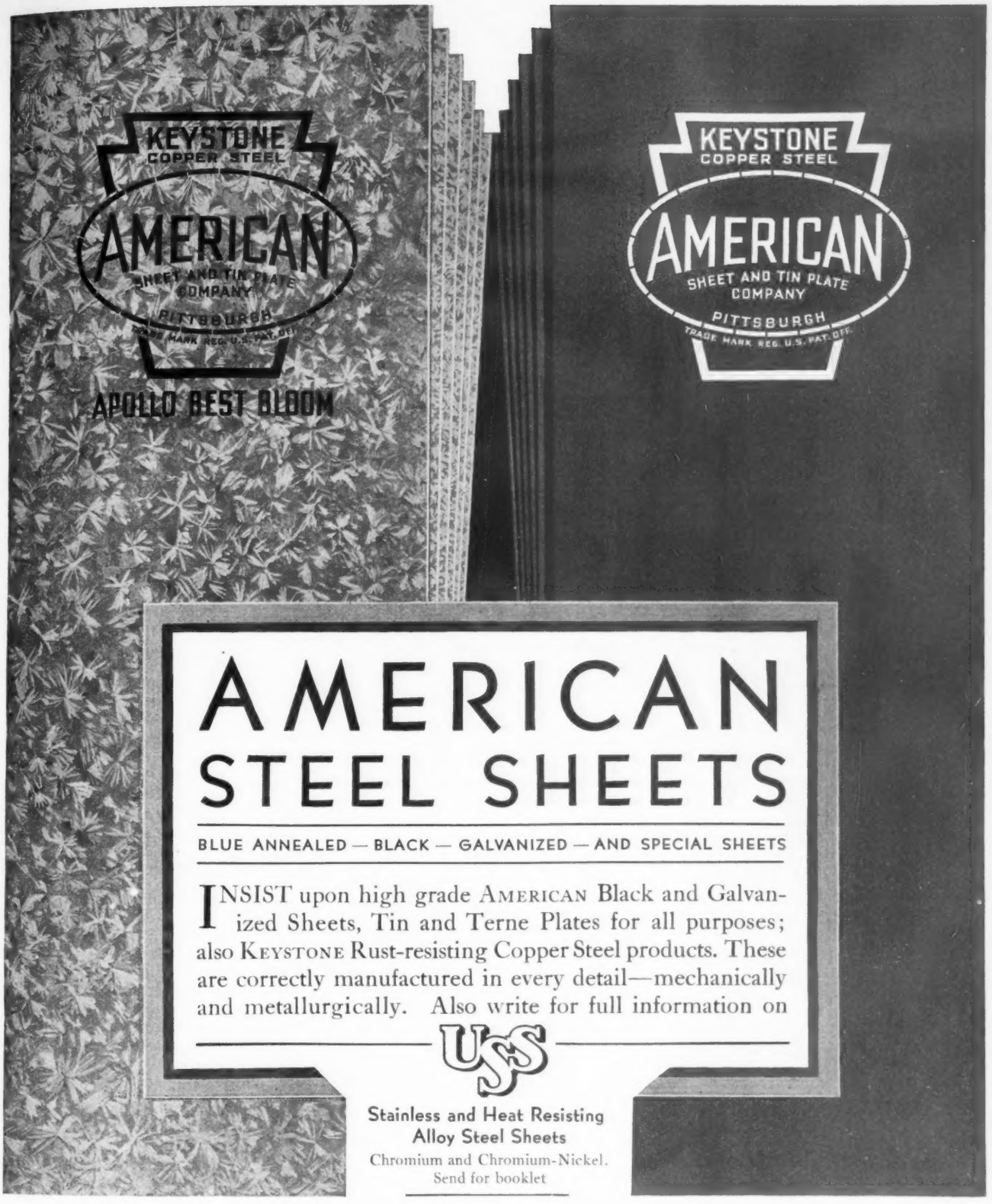
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.50 to 14.00
Washed gravel, import duty paid east, tide, gross ton	19.00



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INSIST upon high grade AMERICAN Black and Galvanized Sheets, Tin and Terne Plates for all purposes; also KEYSTONE Rust-resisting Copper Steel products. These are correctly manufactured in every detail—mechanically and metallurgically. Also write for full information on

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CYCLONE FENCE COMPANY
ILLINOIS STEEL COMPANY

FEDERAL SHIPB'LDG. & DRY DOCK CO.
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY

OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Bldg., San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church St., New York, N. Y.

Pig Iron

Demand Is Much Slower—Little Interest in Third Quarter—Basic Sale Closed at Pittsburgh

PIG IRON PRICES, PAGE 78

Pittsburgh—Deferment of the Westinghouse Electric & Mfg. Co.'s inquiry for pig iron requirements at Trafford City, Pa., and the reported closing by the Allegheny Steel Co. on its recent inquiry for basic iron leaves market activity made up of occasional spot orders. Valley producers were unable to compete on the basic iron because certain producers were able to use water delivery, and information regarding the price paid is lacking. Incoming orders usually take only single carloads on which producers are quoting $17, valley, for No. 2 foundry, malleable, basic and bessemer. Prices continue easy, but tonnage is too light to cause shading.

Boston—Foundries are showing a tendency to hold up contract shipments and the melt generally appears to be declining. Sales in this district in the past week amounted to about 700 tons.

New York—Pig iron sales are lighter, aggregating 2500 tons to 3000 tons. The American Locomotive Co. purchased 150 tons of No. 1X for Schenectady, N. Y. Buffalo iron is unchanged at $15 to $16, furnace, and southern iron is $16.50, delivered, alongside docks.

It is reported here, but unconfirmed, that 8 per cent silvery iron has been reduced $2 a ton to $20, base.

Philadelphia—Only a few carloads of pig iron were sold in this district in the past week. Prices are unchanged at $17.26, Philadelphia, for eastern Pennsylvania foundry iron; and $16.25, local docks, for southern. Basic is nominally $17, eastern Pennsylvania furnace.

Buffalo—Demand is light, no orders or inquiries of major size being reported for third quarter. About 7500 tons of North African iron ore has been delivered at the Port Colborne, Ont., plant of the Canadian Furnace Co.

Youngstown, O.—District pig iron producers here were not asked to bid on a Brackenridge, Pa., steelworks' inquiry for basic iron for third quarter. They say they are not interested in it as water-borne iron likely will be offered, which would run the delivered price down too low. The blowing out of the one active Shenango stack at Sharpsville, Pa., last week leaves no merchant stack operating in the Shenango valley, and only one Youngstown Sheet & Tube merchant stack, at Hubbard, O., is operating in the Mahoning valley. Routine sales of No. 2 foundry, malleable, basic iron and bessemer continue to be made here at $17, valley furnace.

Cleveland—Sales of pig iron by furnace interests with headquarters at Cleveland dropped to a new low during the past week, approximately 5000 tons. Foundries in the Cleveland district are operating at an average about two days a week. The Westinghouse Electric & Mfg. Co. has not closed on its inquiry for an unstated amount for Cleveland and Trafford City, Pa., pending more than a month. No other inquiries of importance for third quarter are noted. Melters continue buying on a hand-to-mouth basis. Prices are steady.

Cincinnati—Pig iron sales are in small lots for immediate needs, amounting to nearly 2000 tons during the past week. Quotation on southern iron remains at $11, base Birmingham, but may be tested by an Indiana melter inquiring for 500 to 1000 tons.

Chicago—Pig iron shipments to some plants in the western Michigan automotive territory have been reduced nearly 50 per cent this month. Several sales of bessemer iron have been made in this district at $17, but $17.50 still is quoted for the base foundry grades. Few sales of more than 500 tons are noted and there is virtually no forward interest, although several buyers have contracted for third quarter. Several small sales of silvery iron have been made at $2 a ton under quoted schedules.

St. Louis—The melt during the first half of June was moderately lower than the average for May, and the present rate is expected to continue through this month. Some consumers are specifying fairly well. No inquiries for third quarter have developed. Prices are steady.

Birmingham, Ala.—A few sales for delivery to Atlantic coast points are noted. Operations at cast iron pipe plants here are well sustained. Two furnaces have been blown out in the past two weeks and two more are scheduled to go out this month.

Toronto, Ont.—Melters are buying for immediate requirements, 500 tons being sold in this market in the week, but no inquiries are appearing for third quarter. Prices are unchanged.

Ferroalloy Movement Slow; More Releases at Chicago

Ferroalloy Prices, Page 78

Chicago—Several important releases have just been made for ferromanganese and 50 per cent ferrosilicon, but shipments are off about 25 per cent from the April and May average. Prices are unchanged.

Pittsburgh—Shipments of ferroalloys continue quiet and reflect the current low level of steelmaking operations. Prices are unchanged on ferromanganese and spiegeleisen at $89.70, delivered, and $30, furnace, respectively. Ferrotungsten remains quiet with the market usually around $1.05. Quotations on other grades are unchanged.

Foreign Iron Ore Easier

Iron Ore Prices, Page 78

New York—Spanish North African basic iron ore is easier at 8.50 cents per unit, alongside docks, Atlantic ports. Newfoundland foundry iron ore, 55 per cent, is off ½-cent to 8.50 cents.

Chicago Foundrymen, Supply Interests Hold Outing

Foundrymen and foundry supply representatives of the Chicago district and surrounding territory, representing 27 firms, held an outing, golf tournament and dinner, July 11, at the Gleneagle Country club, near Chicago. A. W. Lemme, Elizabeth Street Foundry Co., Chicago, president of the Chicago chapter of the Gray Iron institute, presided at the dinner and appointed a committee to organize a permanent annual outing for Chicago foundry representatives, the first to be held next October. This committee consists of John Gellert, Nicholl-Straight Foundry Co.; H. E. Risher, Risher Fire Brick Co., and Charles Kawin, Charles C. Kawin Co.

Wire Bought for Army

Washington — Announcement is made of award of contract for 210,000 feet of ⅜-inch wire for the army engineer, Kansas City, Mo., to the American Steel & Wire Co. on a bid of $1929. Sheffield Steel Corp. was awarded 11,000 pounds of the same material.

Scrap

Firmness Appears in Some Districts Though Price Adjustments Continue to Be Made

Chicago—Steel scrap dealers have adopted far more conservative price policies, and fewer low priced offers are being made. Disappearance of much of the recent short activity is illustrative of the general feeling that prices are well liquidated, and actually have gone below yard preparation costs. Despite recent sales, little of the low priced heavy melting steel has been shipped, as current billings still are on the basis of $10 and $9.50 melting steel. While proportionately heavier scrap consumption is noted, with a corresponding falling off in pig iron melt, restrictions on shipments by leading steelworks melters remain severe because of recently reduced steelworks production. It is reported that a small sale of melting steel has been

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	$8.00 to $9.00
Boston, dealers	4.85 to 5.00
Buffalo, No. 1	9.50 to 10.00
Buffalo, No. 2	8.00 to 8.50
Chicago	8.50 to 9.00
Cinci., deal.	8.25 to 8.75
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	8.00 to 8.25
Det., No. 1 deal.	7.25 to 7.75
Det., No. 2 deal.	6.00 to 6.50
E. Pa. del. mill	9.00 to 10.00
N. Y. deal. R. R.	5.50 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.00 to 10.50
St. L. No. 1 sel.	8.25 to 8.75
Federal, Ill.	8.00 to 8.50
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	10.00 to 10.50

COMPRESSED SHEETS

Buffalo, dealers	8.00 to 8.50
Chicago	7.00 to 7.50
Cleveland	7.50 to 8.00
Detroit, dealers	6.75 to 7.25
E. Pa. new mat.	9.00 to 10.00
Pittsburgh	10.00 to 10.50
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	6.00 to 6.50
Cinci., deal	7.75 to 8.25
Cleveland	6.50 to 7.00
Eastern Pa.	7.50 to 8.00
Pittsburgh	8.00 to 8.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.75 to 5.25
Detroit, dealers	4.00 to 4.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.00 to 5.50
Buffalo	12.50 to 13.00
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	13.00 to 13.50
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft and less)	13.00 to 13.50
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	7.75 to 8.00
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	12.50 to 13.00
Chicago	10.00 to 10.50
Eastern Pa.	13.00
Pittsburgh	12.50 to 13.00
St. Louis	8.75 to 9.25

ANGLE BARS—STEEL

Chicago	9.75 to 10.25
St. Louis	8.25 to 8.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	14.00 to 14.50
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	15.00
Pittsburgh billet bloom crops	14.50 to 15.00
Pitts. sheet bar crops	13.50 to 14.00

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	9.00 to 9.50

SHOVELING STEEL

Chicago	8.50 to 9.00
Cleveland	6.25 to 6.75
St. Louis	8.00 to 8.50

RAILROAD WROUGHT

Birmingham	8.00 to 8.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.75 to 8.25
Buffalo, No. 2	9.50 to 10.00
Chicago, No. 1	8.25 to 8.70
Chicago, No. 2	8.50 to 9.00
Cinci., No. 2	8.25 to 8.75
Eastern Pa.	10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.25 to 5.75
St. Louis, No. 2	8.00 to 8.50

SPECIFICATION PIPE

Boston	5.00 to 5.25
Eastern Pa.	10.00 to 10.50
N. Y., deal	6.00 to 6.50

BUSHELING

Buffalo No. 1	8.00 to 8.50
Chicago, No. 1	7.00 to 7.50
Cinn., No. 1 dl.	6.75 to 7.25
Cinn., No. 2	4.00 to 4.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	4.50 to 5.50
Boston, dealers	0.60 to 1.00
Buffalo	4.75 to 5.00
Chicago	3.75 to 4.25
Cinn., deal.	4.50 to 5.00
Cleveland	5.25 to 5.50
Detroit	3.00 to 3.50
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.50 to 7.00
St. Louis	3.50 to 4.00
Valleys	6.00 to 6.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	0.50 to 0.80
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	5.00 to 5.50
Boston, chem.	7.00 to 8.00
Boston, deal.	0.60 to 1.00
Buffalo	6.00 to 6.50
Chicago	3.50 to 4.00
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	11.50 to 12.50
N. Y., deal.	2.00 to 3.00
Pittsburgh	6.75 to 7.25
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	6.00 to 6.50
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	8.00 to 8.50
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	5.75 to 6.25

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.50 to 12.00
Eastern Pa.	9.00 to 10.00

ARCH BARS, TRANSOMS

Chicago, net	10.50 to 11.00
St. Louis	8.25 to 8.75

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	8.50 to 9.00
Chi., steelworks	7.50 to 8.00
Cleveland	6.75 to 7.00
Eastern Pa.	8.00 to 9.00
Pittsburgh	8.75 to 9.25
St. Louis	7.00 to 7.50

STEEL CAR AXLES

Birmingham	12.00 to 12.50
Boston, ship. pt.	11.00 to 12.00
Buffalo	15.50 to 16.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	12.50 to 13.90

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	9.55 to 10.10
N. Y., deal.	12.00 to 13.00
St. Louis	9.50 to 10.00
E. Penna.	18.00

CAR WHEELS

Birming., iron	8.00 to 9.00
Boston, iron	14.00 to 14.50
Buffalo, iron	11.00 to 11.50
Buffalo, steel	12.00 to 12.50
Chicago, iron	10.50 to 11.00
Chi. rolled steel	11.00 to 11.50
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	12.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	11.00 to 11.50
Pitts., steel	12.50 to 13.00
St. Louis, iron	7.75 to 8.25
St. Louis, steel	10.00 to 10.50

NO. 1 CAST SCRAP

Birmingham	9.00 to 9.50
Buffalo (mach.)	9.75 to 10.25
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	7.75 to 8.00
N. Y., del. local foundries	12.00
Pitts., cupola	10.50 to 11.00
San Fran., del.	13.50 to 14.00
Seattle	7.50 to 8.00
St. L. No. 1 ma.	9.00 to 9.50
St. L. No. 1	8.25 to 8.75

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast.	11.50 to 12.50
Buffalo, break	6.50 to 7.00
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 11.00
N. Y. No. 1 dl.	7.00 to 7.50
N. Y. break. dl.	6.00 to 6.50
Pittsburgh	8.00 to 9.00

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.50 to 11.00
Chicago, agri.	9.00 to 9.50
Chicago, R. R.	9.50 to 10.00
Cinn., R. R. dl.	11.00 to 11.50
Cinn., agri., dl.	10.00 to 10.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	10.50 to 11.00
St. Louis, rail	8.00 to 8.50

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
New York	7.00 to 7.50
St. Louis	10.25 to 10.75

LOCOMOTIVE TIRES

Chicago, cut	11.50 to 12.00
St. L., No. 1	10.50 to 11.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	13.50 to 14.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

An Invitation to C. B's. of F. W.

ARE you a member of the ancient order of Critical Buyers of Flat Wire? If so, this invitation is for you.

We invite you to sample the satisfaction that thousands of C. B's. secure by simply turning their flat wire problems over to Roebling.

Making flat wire to meet *exacting* requirements is our specialty. Our flat wire plant [one of the country's largest] is organized—and our men are trained—to handle this type of business. We can give it the time and the painstaking care it deserves—and demands.

We are anxious to serve you and would welcome your inquiry. Roebling Flat Wire is made of cold-rolled high or low carbon steel, in various widths, thicknesses and finishes. We are especially well-equipped to make high carbon flats, tempered or untempered, in any finish, and are now serving many users who formerly found it necessary to import these wires.

JOHN A. ROEBLING'S SONS COMPANY

WIRE • WIRE ROPE • WELDING WIRE • FLAT WIRE • COPPER AND INSULATED WIRES AND CABLES • WIRE CLOTH AND WIRE NETTING

TRENTON, N. J. *Branches in Principal Cities*

Export Dept.—New York, N.Y.

ROEBLING FLAT WIRE

made at $8.75, but this was material not usually classified under strict specifications of leading buyers. Several carload sales of 2-foot and 3-foot broken rail ends brought out 50 cent reductions.

Boston—At least three items in scrap worked down to less than $1 a ton in the past week. Machine shop turnings, cast iron borings and mixed borings and turnings are all quoted lower, the former two from 60 cents to $1 a ton and the latter from 50 to 80 cents. There has been a little buying of heavy melting steel at $4.85 on cars at shipping point and bundle skeleton continues to hold at $3.85 for Worcester delivery, while a little breakable cast has moved at $5 for Pennsylvania delivery. Generally, however, business is at a standstill.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axle	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

New York—Most steel scrap shipments are to the Buffalo district by barge with No. 1 bought at $6.50 and No. 2 at $5.50. Several eastern Pennsylvania mills still hold up shipments. Skeleton steel is reported to have sold $6.50 to Harrisburg delivered and auto steel $7 to Pencoyd. Railroads are reported to have sold some recent heavy offerings at prices several dollars per ton under offers refused several months ago. Some of this scrap is reported stored at Pennsylvania dealers' yards.

Philadelphia—Prices of steel and iron scrap are unchanged, for the first time in several weeks, though there has been little trading to test the market. The Philadelphia navy yard has advertised for bids on 1100 tons of ferrous scrap and a small tonnage of nonferrous.

Buffalo—Dealers are holding scrap for slightly higher prices than consumers are willing to pay, hence the market has been entirely inactive during the past week. Dealers say $6.50 is now the minimum they will accept for blast furnace scrap and that $8 offers for No. 2 heavy melting steel are being ignored.

Pittsburgh—Steel and iron scrap is easier following fairly active buying a week ago by one consumer. Heavy melting steel sold at $10.50 and $10.75, but the former now is regarded as the top of the market. Distress lots of various grades are sold occasionally at low prices but most quotations are nominally unchanged.

Cleveland—Activity in iron and steel scrap is further restricted. With the exception of the selected grade of material moving to the American Steel & Wire Co., shipment of melting steel to local consumers are at a standstill. No. 1 heavy melting steel has been out to $8.50 to $9 a ton with No. 2 $8 to $8.25. Compressed sheets have dropped to $7.50 to $8, as have bundled sheets to $6.50 to $7. Shipments of blast furnace scrap to the Otis Steel Co. have been further reduced and are expected to be cut off entirely by next week. The quotations on this material are unchanged. Valley quotations remain unchanged at recent low levels.

Detroit—Heavy melting steel and compressed sheets have been reduced 25 cents per ton on the basis of actual recent sales. The market is nominal on most grades. Production of scrap by automotive sources is diminishing as the season advances.

Cincinnati—With two important consumers refusing shipments, the iron and steel scrap market remains dull. Dealers' quotations, however, are unchanged excepting three adjustments, pipe and flues dropping to $6 to $6.50, rails for rolling at $10.25 to $10.75 and agricultural malleable at $10 to $10.50.

St. Louis—Except for slightly more stability in prices than in many weeks, iron and steel scrap has developed no changes.

Some dealers are bidding a shade higher on certain grades, mainly to acquire tonnage for laying down. There has been no appreciable increase in new orders, and the volume of contracts outstanding continues to diminish.

Birmingham, Ala.—Movement of steel and iron scrap is slight. Melters are buying against weekly needs at most and some melters have stock on yard. All prices are weak, with consumers making offers on tonnage.

Toronto, Ont.—New business is scarce according to local iron and steel scrap dealers. Current demand runs to special grades and consumers are buying only for spot needs. Demand for steel scrap is featureless and only small tonnages of heavy melting steel and turnings are being shipped to the Hamilton district. Iron grades are moving in a spotty way. No. 1 machinery cast has a fairly regular call from foundries, but other lines are dull. Dealers are still out of the market and have made no recent revision in prices.

Acme Car & Equipment Corp., New York, has changed its name to Acme Transport Inc.

Coke

Market So Far Unaffected by Strike—Coal Prices Firmer—Users Not Increasing Reserves

COKE PRICES, PAGE 78

Pittsburgh — The beehive coke market presents an even tenor, the coal strike so far having little influence on demand or prices. Connellsville coal fields are unaffected by labor troubles and in view of light demand supplies are adequate for present needs.

Some steel companies' coal mines are threatened, but now are generally free from strikes. No possibility of a scarcity of by-product coking coal is seen unless the labor situation becomes considerably more serious, and users show little disposition to increase reserves. Coal prices are firmer, but not materially higher. Spot furnace coke continues $2.40 to $2.50 for the standard grade. Foundry demand is fairly steady, but light, with prices $3.25 to $4.85 per net ton.

Boston—Because of the low melt in New England foundry coke is moving at a slow rate and prospects are that contracts for the last half of the year will be reduced.

Cincinnati—Little change is noted in specifications for by-product foundry coke, shipments being near the May rate. Bookings for the last half are slow.

St. Louis—Specifications and new purchases have declined since the first of the month. Producers report further moderate reduction in operations.

Birmingham, Ala.—Production is unchanged. Though more ovens are in operation than two months ago the rate is slower. Prices are steady.

Pacific Coast

Portland Public Works Give Most Business This Year—Warehouse Prices Under Pressure—Need for 15,000 Tons Additional Plates Met in Hetch Hetchy Line

Portland, Oreg. — Roadwork and public construction have given the iron and steel plants of this city most of their orders this year. Industrial activity is low and there is little promise of improved conditions during the remainder of 1931. Lumber and logging, on which steel depends to a large extent in this territory, are depressed. Fabricating plants have no new work in sight while machine shops are operating only part time.

Wholesale jobbing houses are doing little business but are trying to maintain prices. However, the upset in prices at Seattle is beginning to be felt here and the same conditions will likely apply. There is more foreign competition here than on Puget Sound. Angles and bars predominate in imports but recently increased shipments of nails and wires of German origin are being laid down here.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

The Oregon highway commission has awarded a large amount of work this spring, including a number of bridges. Plans will be ready in 60 days for the new federal building requiring 700 tons. The Lloyd hotel, with which is tied in the Sixteenth street viaduct, requiring a total of more than 2000 tons of structurals, awaits definite action by Los Angeles backers. The proposed Commonwealth building, calling for 3100 tons of shapes, will not be built this year, while the Medical Arts building proposed for the University group at Eugene, Oreg., is uncertain. Portland's proposed Front street market, requiring considerable steel, remains unsettled.

State and government highway projects have resulted in award of about 2000 tons of corrugated culverts, divided between the Beall Pipe & Tank Co. and Pure Iron Culvert & Mfg. Co., of this city.

Willamette Iron & Steel Works is building four steel barges for United States engineers, involving 180 tons of shapes, previously reported at 100 tons. The same plant is completing digesters and other equipment, total of 650 tons, for the new Weyerhaeuser pulp plant at Longview, Wash. The Pacific Iron Works has the contract for a bridge over Coos bay, Marshfield, Oreg., requiring 250 tons of shapes, previously reported at 100 tons or more. The same plant has contracts to construct four small state bridges totaling 300 tons of structurals. Lindstrom & Fiegenson, Portland, have the contract from the bureau of roads for the Hellgate bridge, Lane county, at $54,322. Steel for this job will be fabricated by Poole & McGonigle, Portland, the amount being 220 tons. Old steel will be used in the reconstructed bridge on the Umpqua highway, Douglas county, for which J. A. Varner holds the general contract. Mercer Steel Co. will furnish the reinforcing for the Link river bridge, Klamath Falls, about 100 tons previously reported to unnamed interests.

Poole & McGonigle recently completed their contract of furnishing in excess of 2000 tons of structurals for the addition to the Meier & Frank department store.

More Pipe Plates Needed

San Francisco—(*By Air Mail*)—Demand for steel products continues to involve small lots for the most part and consumers are confining purchases to material for immediate consumption. The largest award of the week involved 300 tons of plates for tanks and bins for a plant at South Gate, Calif., most of which was placed with the Consolidated Steel Corp.

Bars, Plates and Shapes

Prices on merchant bar steel have been reduced from 2.10c, c.i.f., to 2.05c, c.i.f. No large inquiries or sales for this class of material have developed lately. Carload and less than carload lots make up most of the going business. Bookings included 268 tons for a bridge over the Santa Clara river in Ventura county, Calif., 114 tons for an undergrade crossing in San Mateo county and 148 tons for highway work in San Joaquin county, all placed with unknown companies. Quotations on out-of-stock material continue firm at 2.60c, base, on carload lots.

Movement of plates is restricted to small lots and few awards of importance have been noted of late. From present indications it appears likely that San Francisco will shortly call for bids on 15,000 tons for an emergency pipe line for the Hetch Hetchy project. Current inquiries include a number of steel tank and power projects, but the tonnages involved are all less than 100 tons. Prices continue general at 2.00c, c.i.f.

Only four structural awards were reported this week and only one new inquiry came up. Two bridges in Apache county, Ariz., involving 233 tons, went to an unknown company. The Golden Gate Iron Works is low bidder on 115 tons for a theater in Alameda and the Consolidated Steel Corp. is low bidder on 175 tons for a grandstand at the Los Angeles county fair grounds. Plain shapes range between 2.05c and 2.15c, c.i.f.

Other Finished Material

While no awards of importance were noted in cast iron pipe this week, several new inquiries have come into the market. Fairfield, Calif., will open bids, June 18, for 208 tons of 2 to 12-inch Class 150 pipe. Long Beach, Calif., and Los Angeles have opened bids on 483 tons and 105 tons, respectively, of 2-inch pipe. Burbank, Calif., will open bids June 16 for 233 tons of 6 to 18-inch class B pipe.

Consumers of sheets continue to buy in small lots and little improvement in demand, from present indications, can be expected during the next month or two. Prices on blue annealed, No. 10 gage, and on No. 24 gage black and galvanized sheets remain unchanged, respectively, at 2.50c, 3.00c and 3.50c, c.i.f.

Seattle Opens Bids

Seattle—Bids have been taken by the city for furnishing structurals, gratings and other material for the city light department, Skagit river project; for the Albro Place viaduct, involving 340 tons of reinforcing and 31 tons of structurals; for furnishing a 20-inch lathe, a 24-inch shaper, 21-inch drill, grinder head and other equipment for the light department; 20 7½-kilowatt transformers and five 10-kilowatt transformers; bids for the sale of 150 tons of scrap steel rails. June 19 Seattle will open proposals for furnishing ten 15-tooth pinions. The city has awarded to the Olympic Steel Works the contract for furnishing steel castings on bids ranging from 8 to 17 cents, according to size.

Universal Steering Arm Inc., Pontiac, Mich., has increased capital from $2000 to $50,000.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13+48
¾	60	49½	½	23 7
1—1½	62	51½	¾	28 12
2—3	63	52½	1—2	34 18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29 13
2½—4	59	48½	2½—4	34 20
4½—6	58	47½	4½—6	33 19
7—8	54	41½	7—8	31 17
9—10	47	34½	9—12	21 8
11—12	46	33½		

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload. base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 45.00 to 47.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 34.50 to 36.50
Four-inch, New York ..... 39.50 to 40.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.10c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.75c
Cincinnati	3.00c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.30c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†	3.40c
Pitts.**	3.30c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chicago (local del.)	4.35c
Chicago (outside)	4.35-4.60c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†	3.85c
Pitts.**	3.90c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.15c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.30c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

Repeatedly used on many nationally known products where the standards of quality are the highest

To the men at WEST STEEL are constantly entrusted the inflexible quality standards which uphold reputations of national scope. WEST MEN and WEST STEEL have always proven worthy.

Are you having trouble with some particular casting? WEST STEEL will solve your problem. Send us your blue prints and specifications.

THE WEST STEEL CASTING CO., *Cleveland, Ohio*

WEST STEEL
QUALITY SERVICE

—BETTER STEEL CASTINGS—

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass ..product prices based on 8.25c, Conn., for copper

Sheets	
Yellow brass (high)	15.62½
Copper, hot rolled	18.12½
Lead, full sheets (cut ½c more)	7.75
Zinc sheet (100-lb. base)	8.75
Tubes and Pipes	
Seamless yellow brass (high)	20.50
Seamless copper	20.62½
Rods	
Yellow brass (high, full turnings)	13.87½
Naval brass	14.87½
Anodes	
Copper, untrimmed	15.62½
Wire	
Yellow brass (high)	16.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	4.75 to 5.00
Chicago	4.50 to 4.75
Cleveland	5.00 to 5.50
St. Louis	4.75
Heavy Yellow Brass	
New York	3.00 to 3.25
Heavy Copper and Wire	
New York	6.00 to 6.25
Boston	5.50 to 5.75
Chicago	4.50 to 5.00
Cleveland	5.00 to 5.50
St. Louis	5.25 to 5.50
Red Brass Borings	
New York	4.50 to 4.75
Yellow Brass Tubing	
Cleveland	3.00 to 3.50
Light Copper	
New York	5.00 to 5.25
Chicago	4.50 to 4.75
Cleveland	4.00 to 4.50
St. Louis	4.75
Light Brass	
Boston	2.25 to 2.50
Chicago	2.50 to 2.75
Cleveland	2.25 to 2.50
St. Louis	2.50 to 2.75
Zinc	
New York	1.00 to 1.25
Cleveland	1.00
St. Louis	1.00
Aluminum	
Clippings, soft, Cleveland	11.00 to 12.00
Clippings, hard, Cleveland	9.00 to 9.50
Borings, Cleveland	4.00 to 4.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, Boston	4.00 to 4.25
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt aluminum No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	8.12½

Metals

Market Quiets Down Following Improvement — Copper Prices Weaken—Tin Also Quoted Off

New York—The metal market has quieted down in the past day or two following a week of improvement. Zinc prices recovered from 3.20c on better buying, while lead became firmer. Tin went up more than 1 cent and then lost half of its recovery because of the absence of buyers. Copper appeared firmer for a time and export sales increased, but in the past day or two the market has been weak at 8.00c with the absence of both foreign and domestic demand.

Mill products continue quoted on the basis of 2.85c for copper, but new business is extremely light. Specifications on old orders also are small in volume. The number of sales is large.

Copper—Not much metal is available at 8.00c, but users show little interest. A difference in price is made on whether the buyer want nearby or distant future delivery. Production continues larger than consumption. Meanwhile, certain producers as well as custom smelters follow the policy of selling metal as it becomes available at whatever price it will bring. Stocks of refined copper increased over 30,000 tons last month.

Zinc—A recent moderate buying movement pushed the price of prime western up to 3.40c, East St. Louis. At this level, buying fell off and the price remained fairly steady. Smelters have been quoting premiums as much as five points a month on futures. Production has been balanced against demand better than in any of the other metals.

Tin—The recovery in the stock market, news of an effort to form a tin pool in Europe, and short covering by professional operators caused tin prices to jump from low of 22.30c on June 8 to 23.45c at one time on June 11. On only one recent day, however, was there good buying. The result was the price soon fell below 23.00c. Monthly and weekly statistics continue decidedly weak.

Lead—About a week ago buying improved substantially for June and July shipment, but it again quieted down, with no change in price.

Aluminum — New business continues light, but prices are steady on both new and remelt metal.

Coke By-Products More Active; Naphtha Stronger

New York—Toluol demand is now ahead of production, distributors predicting a shortage within 30 days if buying holds to the recent rate. Prices are steady, with the bulk of toluol going at 27.00c. Benzol is unchanged in demand, but prices are easy. Some sales of xylol and solvent naphtha are at lower prices, 24.00c being noted. Volume is unchanged. A slight increase is reported in phenol at 17.00c. Naphthalene spot business shows some recession. Prices are firm and unchanged. Sulphate of ammonia export business is light and domestic buying is only fair.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.18 to 0.19
90 per cent benzol	0.18 to 0.19
Toluol	**0.27 to 0.29**
Solvent naphtha	0.24 to 0.26
Commercial xylol	0.24 to 0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	**0.16 to 0.17**
Per Pound at Producers' Plants	
Naphthalene flakes	**3.75 to 4.75**
Naphthalene balls	**4.75 to 5.75**
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.675 to $1.775

Quicksilver $99-100

New York—Quicksilver is $99 to $100 a flask.

Prices of the Week, Cents a Pound

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum	Spot	Ingot
	Electro delivered	Lake delivered	Casting refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Antimony	Nickel
June 10	8.25	8.37½	8.00	23.05	23.37½	3.75	3.60	3.30	22.90	6.10	35.00
June 11	8.25	8.37½	8.00	23.37½	23.67½	3.75	3.60	3.37½	22.90	6.00	35.00
June 12	8.12½	8.37½	8.00	23.20	23.50	3.75	3.60	3.40	22.90	6.00	35.00
June 13	8.12½	8.37½	8.00	23.12½	23.45	3.75	3.60	3.40	22.90	6.00	35.00
June 15	8.00	8.37½	7.87½	22.70	22.95	3.75	3.60	3.40	22.90	6.00	35.00
June 16	8.00	8.25	7.75	22.70	23.00	3.75	3.60	3.37½	22.90	6.00	35.00

Europe

Britain Ships Shapes to Canada —Iron and Steel Output Up— Japan Offers Iron in Germany

London—(*By Cable*)—Business in the European iron and steel markets continues sluggish. Conditions in Belgium appear to be growing worse, with a steady decline in prices. The smaller companies are anticipating a critical period. Some rail orders have been placed for shipment to the Congo. In France a further decline in exports is reported. An unusual reflection of the world-wide depression is noted in STEEL's report from its Berlin correspondent, mentioning the fact that Japanese pig iron is being offered at low figures in the German market.

In Britain structural steel demand appears more active in the Middlesbrough district. Two thousand tons of structural material is being shipped to Canada. The outlook for tin plate is better, another mill having been restarted. The price of Welsh tin plate bars has been reduced to £4 12s 6d ($22.47). The Midland is feeling less competition in the pig iron market from foreign sources. East coast hematite is being sold to Denmark and Italy.

The daily rate of pig iron production in Great Britain in May was 11,179 tons, compared with 10,733 tons in April. Total output for May was 346,500 tons. Eighty stacks were in blast at the close of the month, a net gain of two.

Output of steel ingots and castings on a 31-day basis averaged 14,035 tons, compared with 13,167 tons in April. Production in May amounted to 435,100 tons.

British iron and steel exports in May dropped to 167,544 tons from 187,865 tons in April, while imports increased to 227,757 tons from 193,390 tons in April.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 15	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3**.....	$14.24	2 18 6*	$11.57	2 7 6	$11.57	2 7 6	$12.18	2 10 0
Basic-bessemer.....	14.61	3 0 0†	11.32	2 6 6	11.32	2 6 6	13.39	2 15 0
Hematite, Phos. .02-.05	15.58	3 4 0	.....	.....	.....	.....	17.05	3 10 0
SEMIFINISHED STEEL								
Billets.....	$25.57	5 5 0	$15.10	3 2 0	$15.10	3 2 0	$15.83	3 5 0
Wire rods.....	41.40	8 10 0	24.35	5 0 0	24.35	5 0 0	24.35	5 0 0
FINISHED STEEL								
Standard rails.....	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars.....	1.63c	7 10 0	.75c	3 8 0	.75c	3 8 0	.81c	3 14 0
Structural shapes.....	1.68c	7 15 0	.72c	3 5 6	.72c	3 5 6	.74c	3 7 0
Plates.....	1.79c	8 5 0	.89c	4 1 0	.89c	4 1 0	.91c	4 3 0
Sheets, black, 24 gage	1.90c	8 15 0	1.76c	8 0 0	1.76c	8 0 0	1.84c	8 7 6
Sheets, gal., 24 ga. corr.	2.22c	10 5 0	2.20c	10 0 0	2.20c	10 0 0	2.31c	10 10 0
Bands and strips.....	2.06c	9 10 0	.91c	4 2 6	.91c	4 2 6	.94c	4 5 0
Plain wire, base.....	2.06c	9 10 0	1.08c	4 18 6	1.08c	4 18 6	1.10c	5 0 0
Galvanized wire, base..	2.39c	11 0 0	1.38c	6 5 0	1.38c	6 5 0	1.38c	6 5 0
Wire nails, base.....	2.39c	11 0 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Tin plate, box 108 lb...	$ 3.41	0 14 0	.....	.....	.....	.....	$ 8.28	1 14 0

Domestic Prices at Works or Furnace—Last Reported

			French Francs		Belgian Francs		Renten Marks	
Fdy. No. 3 Pig Iron**	$14.24	2 18 6	$11.96	305(2)	$12.79	460	$18.51	78
Basic pig iron.....	14.61	3 0 0	12.74	325(1)	11.54	415	20.29	85.50
Furnace Coke.....	2.92	0 12 0	5.68	145	5.14	185	5.08	21.40
Billets.....	26.18	5 7 6	19.21	490	17.65	635	‡6.22	110.50
Standard rails.....	1.79c	8 5 0	1.41c	485	1.57c	1,210	1.37c	127
Merchant bars.....	1.63c	7 10 0	.86c	480	.83c	635	1.38c	128
Shapes.....	1.90c	8 15 0	.99c	550	.85c	650	1.35c	125
Plates.....	1.95c	9 0 0‡	1.26c	700	.97c	745	1.59c	147
Sheets, black, 24 gage	1.90c	8 15 0	2.21c	1,225	1.89c	1,450	1.26c	117
Sheets, gal. 24 ga., corr.	2.28c	10 10 0	2.57c	1,425	2.54c	1,950	3.56c	330
Plain wire.....	2.06c	9 10 0	1.85c	1,025	2.08c	1,600	2.24c	207
Bands and strips.....	2.06c	9 10 0	1.10c	610	1.40c	1,075	1.60c	148

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £16 9s 0d ($79.95) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Profitless British Prices Too High for Competition

Birmingham, Eng.—Three stacks have gone out of action this week, two at Barrow and one at South Bank, Middlesbrough. In each case they have been stopped for repairs but with demand in its present dull state ironmasters will not be in any hurry to relight them. On the north-east coast only 22 stacks now are in operation and their output is ample for all needs. A few small sales have been made to Scotland at prices well below cost but makers decline to cut prices elsewhere and they are being undersold by foreign competitors both at home and in neutral markets. With the stoppage of two furnaces at Barrow only six are now in blast but stocks are about 100,000 tons.

An increase of about 3000 tons of iron and steel is shown in the monthly returns of imports into the Tees during May. Imports of sheet bars, billets, etc., were 9446 tons, against 9483 for the previous month and pig iron jumped to 3881 tons from 1337 in April. Plates, bars, angles, rails, etc., increased to 1163 tons from 849 and the total imports were 14,490, against 11,669 in April.

Seek Lower Steel Prices

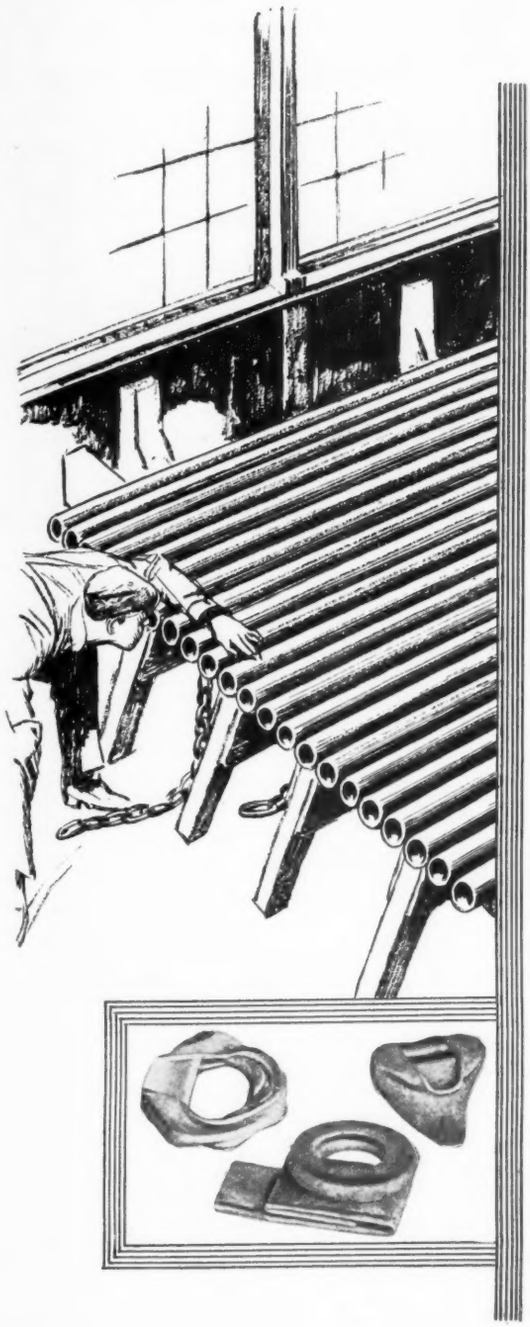
Members of the shipbuilding employers federation have this week protested against the dearness of British steel and have decided to make renewed efforts to obtain a reduction. Steelmakers appear likely to turn a deaf ear to this complaint. They contend they have gone as far as they may with safety in reducing the price of steel even though concessions have mainly been by way of rebates to those who use British steel only.

Present selling prices, they say, hardly cover production costs and little profit is being made. It is admitted that prices would have come tumbling down long since if it had not been for the organization of the Steel association, which has kept a firm hold throughout the slump.

In the Midland pig iron market the spurt in buying which followed the sudden and unexpected reduction in price has faded out and merchants and furnacemen are mostly of the opinion that demand is shrinking.

The Continental market is weak and low prices are being quoted by merchants in Birmingham. It is possible to buy 2-inch billets at £4

The Clear Eye of Inspection . . .



EACH Pittsburgh Seamless Boiler Tube is rigidly inspected . . . from start to finish . . . for possible flaws.

Steel of the proper chemical analysis is carefully selected.

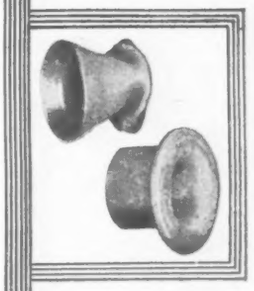
Check analysis is taken on drillings of the finished tubes.

Test specimens from each run of tubes are subjected to flattening, flanging and crushing tests to assure proper ductility.

Every tube must pass exacting tests for diameter, gauge and length.

Each tube individually must pass a hydrostatic test to a minimum pressure of 1,000 lbs. per square inch . . . or higher, as specifications demand.

More than twenty-five years of experience in the manufacture of seamless steel pipe and tubing exclusively, are behind every Pittsburgh Seamless Steel Boiler Tube . . . and every "Pittsburgh" tubular product.



Pittsburgh Steel Products Co.

Division of

Pittsburgh Steel Co.

Pittsburgh · New York · Detroit · Houston · Chicago · St. Louis · Tulsa

Pittsburgh P Seamless

BOILER TUBES

Form ore to Finished Pipe or Tube, Pittsburgh Seamless Pipe or Tubing is the result of one Company's resources and Skill.

3028

($19.44) a ton, delivered and bars at £4 12s ($22.35), but with few exceptions consumers are unresponsive.

Galvanized sheet prices are easy and it is reported that the quoted price of £10 5s ($49.81) for 24-gage would be shaded for a good order.

French Market Dull and Pig Iron Output Is Cut

Paris—The situation on the French iron and steel market is unchanged, there being no improvement. Dull conditions rule in all parts of the country. Business is as active as previously, except in the branches connected with agriculture. The bad weather has considerably reduced agricultural orders but this situation cannot last long, and it may be expected that as soon as the wet weather ceases, activity will reappear in this branch of the trade.

Although the volume of transactions is fair, prices of metallurgical products continue to fall. Losses of the industries are heavy, and during the past fortnight everyone has been endeavoring to find a solution to this crisis, which might rapidly turn into a catastrophe. Meetings are held to determine the form and conditions of a syndicate for sales on the home market of hot-rolled finished materials but the problem is difficult and, even although desired by everyone, it is certain that some time must elapse before such a comptoir could commerce operating.

On the export market the state of affairs is worse, prices having again fallen by 1s or 2s (24c or 48c), and pessimism is spreading. Conditions on the coal market remain unfavorable, and as there is no indication of any industrial improvement, it does not seem that there can be a change in the situation. Stocks are growing and idle shifts are threatening to increase still further.

Pig Iron Output Reduced

Production of pig iron is being curtailed. The Societe des Hauts Fourneaux de Saulnes has decided to blow out one blast furnace at Hussigny and two at Saulnes. This is a wise decision, which confirms the fact that French producers prefer to reduce output rather than allow prices to fall further. The current price of chill-cast No. 3 is 300 to 305 francs. Hematite is quoted at 500 francs, delivered works.

New orders for rolled materials are insufficient and some steelworks are stocking part of their output. In the East, prices range from 400 to 460 francs. Reinforced concrete bars of small section are quoted at 390 francs.

The wire products department is rather unsatisfactory. Prices are lower than a fortnight ago, but as it has been decided to renew the existing entente up to the end of 1931 instead of May 31, it is expected that prices will become firmer.

Belgian Ingots Show Gain

Brussels—The output of pig iron, coke and finished steel in Belgium in April was below that of March, but steel ingots and castings in April made a small gain. Comparative figures follow, in metric tons:

Mon. ave.	Coke	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	.....	207,000	205,000	155,000
1928	494,000	.....	325,000	328,000	281,000
1929	499,000	58	341,000	344,000	296,000
1930	447,000	44	283,000	282,000	232,000
1931					
Jan.	417,100	45	270,360	263,120	173,290
Feb.	380,130	44	240,210	227,880	193,010
Mar.	420,360	43	263,260	247,670	200,010
Apr.	410,430	46	257,500	250,670	199,600

German Output Declines

Berlin—A further decline in production of pig iron and steel ingots and castings was registered in Germany in April. Comparisons follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings	Finished steel
1913*	204	910,000	993,000	970,000
1928	101	985,000	1,210,000	881,000
1929	95	1,117,000	1,354,000	940,000
1930	63	808,000	962,000	679,000
1931				
Jan.	61	603,104	772,776	539,850
Feb.	53	520,176	759,633	527,436
Mar.	56	560,005	811,146	583,428
April	58	529,161	743,341	527,686

*In present boundaries.

French Make Less Steel

Paris—The output of pig iron and steel ingots and castings in France continues to show a downward trend. The production of pig iron in April was below that of March, but above February. Comparative figures follow, in metric tons:

Mon. ave.	Iron ore	Pig iron	Steel ingots and castings
1913	3,588,000*	756,000*	581,000*
1928	4,094,000	832,000	792,000
1929	4,220,000	864,000	808,000
1930	4,038,000	841,000	783,000
1931			
Jan.	3,805,000	801,000	746,000
Feb.	3,397,000	726,000	693,000
March	3,540,000	775,000	722,000
April	3,306,000	738,000	675,000

*In present boundaries.

Luxemburg Quarter Low

Brussels—During first quarter the tonnage of pig iron produced in the Grand Duchy of Luxemburg was 530,362 metric tons, against 730,814 tons in the corresponding period of 1930, a decrease of 27.3 per cent. The output of steel ingots and castings during first quarter was 505,205 metric tons, as compared with 656,457 tons in the first three months of 1930, a decrease of 22.8 per cent. Comparisons follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings
1913	....	212,000	111,000
1928	38	231,000	214,000
1929	37	242,000	226,000
1930	26	206,000	189,000
1931			
Jan.	25	183,130	171,591
Feb.	25	168,848	161,140
March	25	178,384	172,474
April	25	171,142	165,822

French Steel Trade Slack

Paris—Exports and imports of pig iron, ferroalloys and steel products in April in France were the lowest for any month this year, as shown in the following comparisons, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferro-alloys	Steel*	Pig iron and ferro-alloys	Steel†
1928	5,000	9,500	54,000	343,000
1929	4,000	14,000	48,000	281,000
1930	14,000	21,000	45,000	273,000
1931				
Jan.	11,000	23,000	42,000	246,000
Feb.	14,000	22,000	44,000	265,000
March	12,000	19,000	44,000	265,200
April	9,000	16,000	41,000	249,000

The above figures include returns from the Saar district.

*Semifinished steel, plates and sheets, tin plate, steel tubes, steel scrap.

†Ingots, semifinished steel, merchant bars, structural steel, steel tubes, wheels and tires, rails, hoops and bands, wire rod and wire products, plates and sheets, tin plate, steel scrap.

Belgian Trade at Low Ebb

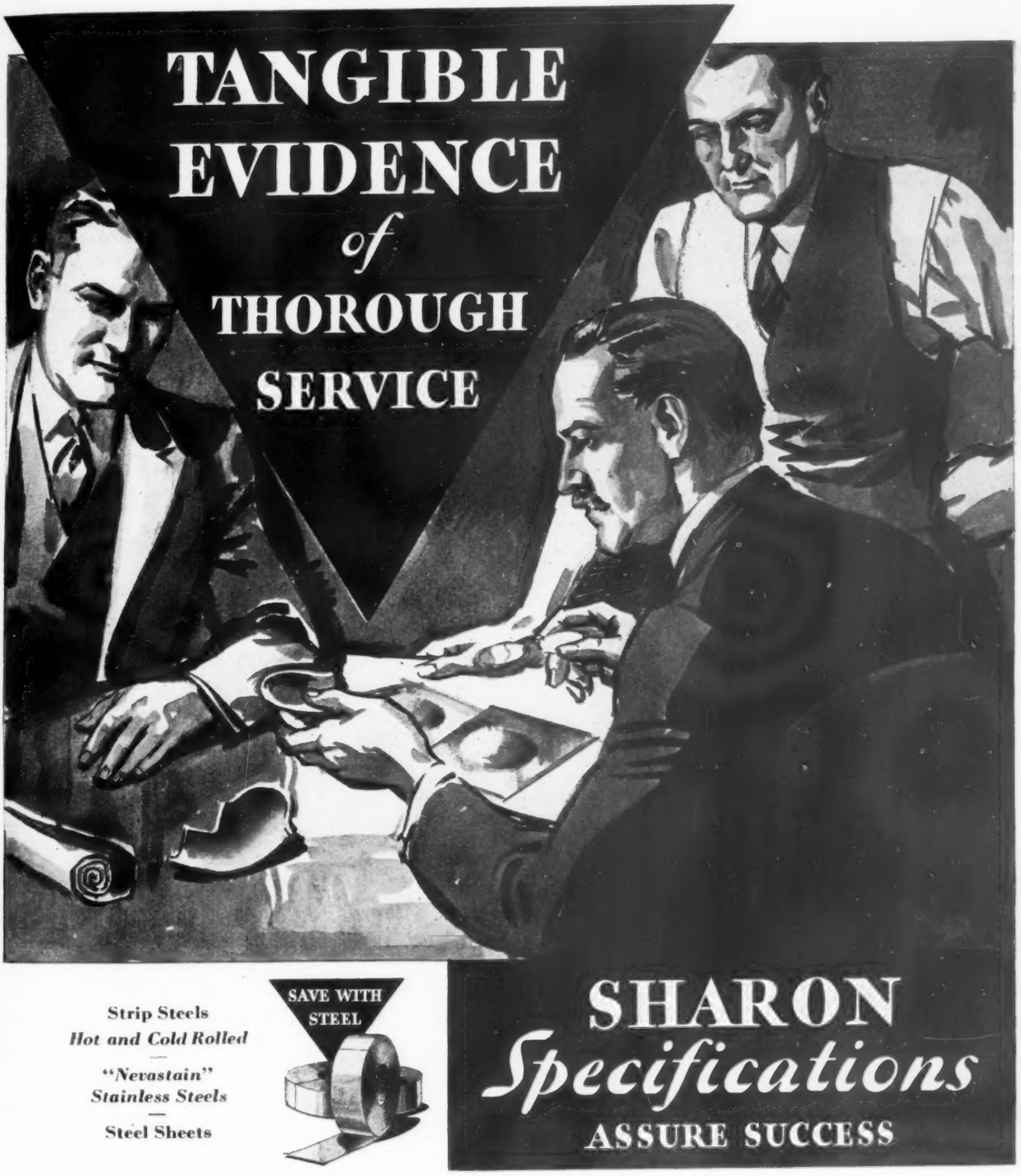
Brussels—Exports of pig iron from Belgium and Luxemburg were 26,766 tons for the first quarter of 1931, compared with 30,283 tons for the corresponding period of 1930, a decrease of 11.6 per cent. Exports of other iron and steel products totaled 931,300 tons for the first three months, against 1,091,500 tons for the first quarter of last year, a decrease of 15 per cent.

Imports of pig iron into Belgium and Luxemburg for first quarter were 70,406 tons, compared with 124,635 tons for the first quarter of 1930, a decrease of 43.5 per cent. Imports of other iron and steel products in first quarter were 82,350 tons, against 99,500 tons for the corresponding period of last year, a decrease of 17.3 per cent. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930	33,350	28,000	9,600	343,400
1931				
Jan.	25,432	28,400	7,980	285,300
Feb.	22,943	30,650	11,015	321,035
March	22,031	23,300	7,771	325,000

We can tell and re-tell to you of the quality, accuracy, and uniformity of Sharon Steel Strip and Sheets—but these claims, truthful as they are, can never convince like the ultimate effects of "Sharon Specifications"—an Engineering Service that starts at your product, extends through the entire resources of Sharon, and ends again with your product—assured of success. ▲ A hundred and one phases of study, analysis, calculation, conference, development, and tests (all of which are valuable parts of this service), terminate in a sound recommendation—"Sharon Specifications"—tangible evidence of thorough service, backed by long experience and successful achievement. ▲ Investigate the possibilities of this valuable Sharon service through its application to your product. A request from you will start "Sharon Specifications" activity on your strip or sheet steel problem.

SHARON STEEL HOOP CO.—SHARON, PA.



Machinery

REPORTS from several industrial centers indicate a definite need for replacement machine tools in a number of cases, coupled with a definite desire to purchase on the part of production executives whose recommendations in ordinary times would pass unquestioned. Counteracting this, however, is a general tendency on the part of higher executives—influenced possibly by banking interests in some instances—to discourage, or at least to postpone, all capital expenditures. This emphasizes importance of the educational campaign which the National Machine Tool Builders' association is directing toward higher industrial executives and bankers.

New York—Bids go in next week on 15 engine lathes for the Brooklyn navy yard. Inquiry from industrial plants shows a spotty improvement, there being a number of scattered requests for figures on lots of one or two tools. In general, however, the equipment market is unchanged and dull. A few plants have fair orders for electrical equipment, including motors. Builders of machinery generally are operating on curtailed schedules which are likely to be continued for some time, although there are a few exceptions. The list of about 20 tools for a Bloomfield, N. J. school has not as yet being closed, but action is expected this week.

A Newark, N. J., ball bearing plant is operating about five days a week, as also are several in Connecticut. Few advance orders are being booked, however, this activity being due to immediate business. A new England builder of grinders sold four more machines to Russia during the week. Airplane plants are more active, following some recent government awards, but are not in the market for machinery, being already tooled up for heavy production. Railroads continue to take a minimum amount of equipment. Demand for repair and small tools parts has slowed up.

Worcester, Mass. — New government schedules which call for 20 to 25 lathes are the principal items in domestic inquiry developing in an otherwise dull week. Some tools for middlewestern schools likewise are pending but there are no indications that this business will be closed soon.

Principal government inquiry is for navy yard equipment, this supplementing schedules already closed, on which many machines already have been delivered. Dearth of domestic inquiry, especially from the New England area, is expected to persist throughout the summer months.

Pittsburgh—Occasional orders for machine tools are being placed but the volume of business is light and no more active than during the past several months. Orders usually represent individual tools which have been pending for some time, new inquiry being rather light.

Cleveland—With declining automobile production, hopes of fair replacement business on machine tools in that direction have faded for the summer. Subsiding production in Detroit plants seems not to have affected automobile body building here, one large plant employing a night shift of considerable size. Also, there are a few large orders for screw machine products being executed here.

None of this activity has helped the machine tool situation, and small tools and repair parts likewise are inactive. Plants which had lengthened their working days, and even taken on men, as a result of mild recovery early in the spring, again are reverting to curtailed conditions which prevailed through the winter months.

It is a good sign, however, that experienced local machine tool men interpret the present condition, not as a continuation of a long decline, but rather as the usual summer slump. They believe fundamental conditions to be improving.

Heavy machinery used in steel mills is in demand, and is creating some spots of prosperity in surrounding cities.

Chicago—This week two or three machine tool houses report that they have more business upon which to figure than at any time during the past 30 days. These prospective orders usually comprise needed shop tools, though in some cases these are not actual inquiries. The nature of current floor shopping for machine tools indicates that there is urgent need for new equipment, but inquiries usually are contingent upon final approval by organization executives outside of the purchasing departments.

Chicago board of education has not ordered the 24 lathes and other equipment for Austin High school, which was expected last week. The purchase again was shelved for at least another week because of the board's attention being centered on a $50,000,000 bond issue for new school buildings and sites. Santa Fe railroad still has a few tools to place on its $200,000 inquiry which has been out for several months. St. Paul road is reducing its recent inquiry list of more than 50 items by about 25 per cent, it is stated. Prices show virtually no recession, except on occasional special equipment orders.

Electric Hoist Business Showed Gains in May

New York—Members of the Electric Hoist Manufacturers' association report the number of hoists ordered during May, increased 12.204 per cent as compared with the previous month. The value of such orders increased 18.873 per cent as compared with April. Shipments were 17.685 per cent heavier in May than in April.

Equipment Bids Are Closed In Washington

Washington—Navy bureau, supplies and accounts, closed June 16 on one grinder and one motor-driven buffer and grinder for Great Lakes station. The same bureau took bids June 16 on one lathe for San Diego and one motor-driven tool and cutter grinder for Puget sound. Roeper Crane & Hoist Works Inc. Reading, Pa., has been awarded one 15-ton traveling crane for St. Elizabeth hospital, Washington.

Steel Bought for Arsenal

New York—Middleton Nail Works, Philadelphia, has been awarded 8500 pounds steel wire nails for the Frankford arsenal, Pennsylvania, on a bid of 3.00c a pound. Charles Parker Co., Meriden, Conn., was awarded 100,800 iron wood screws for the same arsenal at 13.2c per 100.

Doehler Die-Casting Co., New York, was awarded 15,500 die cast aluminum shipping plugs. Canister Co., Phillipsburg, N. J., has been awarded three cupping presses. On a bid of 9.5c, Carpenter Steel Co., Reading, Pa., has been awarded 150 feet heat treated forged steel.

Also for Frankford the Baldt Anchor & Chain Co., Chester, Pa., has been awarded 88,750 annealed adapter forgings, bidding 8.9c. Aluminum Co. of America was awarded 6500 pounds sheet aluminum on a bid of 30.00c. Bids were rejected on 6500 pounds.

Mirrors of Motordom

(*Concluded from Page* 33)

ports concerning LaSalle. The exception to this statement is Pontiac, which has always outsold its progenitor—Oakland.

New Models Lift Output

Even with the introduction of midyear models greatly minimized, due to the before-mentioned program of the National Automobile Chamber of Commerce, some of the few manufacturers who are an exception for 1931 have expanded their operations sufficiently to lift the industry's production slightly this week.

For the industry as a whole, output of passenger cars and trucks in the past week has totaled slightly more than 66,000 units, compared with just under 66,000 units a week ago. This rate, if continued, would set June down as a 275,000-285,000-unit month for the United States only, compared with about 325,000 in May.

Nash, with four new series swinging into production, has gone to a 5½-day week and is assembling almost 400 units daily, more than doubling its weekly rate. For the next few weeks Nash activities will be speeded up to stock dealers with the new series, probably to be announced within a fortnight.

Plymouth, which has been assembling 400 units a day, 4 days, this week has increased its daily rate to about 500 and its work week to 5½ days, due largely to the forthcoming "vibrationless" series. Another Chrysler unit—Dodge—also has registered a slight gain due to increasing the week to 5½ days a week, although reducing the daily total from 500 to 200 units.

Chrysler proper is unchanged this week at 40 units a day, 5 days, and De Soto at 200 units daily, 4 days.

◆

Ford continues the basis for considerable speculation concerning a revision of its line. It seems fairly well established that Model A will be improved in the fall. However, there is increasing reason for believing that the introduction of an eight has been postponed, one authority now listing it as an early 1932 possibility.

However, Detroit would be surprised at nothing. One large parts maker has received specifications from Ford for material manifestly not designed for the present Model A. The rumor in the East that Ford will bring out a diesel passenger motor receives little credence here, as Packard is generally believed to have done more experimental work on this type than any other Detroit manufacturer and it is not ready to equip an automobile with a diesel power plant.

The rumor that Ford will enter the electric refrigerator business is again current, but there is nothing in the way of additional new equipment to substantiate it.

Ford working forces have been rather sharply reduced and some minor labor difficulties have been encountered in refunding deposits for badges. A midsummer shutdown still is ahead of Ford, and is expected to start any week, beginning July 12. Accumulations of motors and other parts at branch assembly plants are large and production of Model A can be maintained for some weeks while revisions are made at Fordson preparatory to a new Model A.

Production of motors at Fordson has been curtailed sharply, but assembly of cars for the entire Ford operations is just under 7000 units daily, 3 days a week. The decline in Ford production is steady but almost imperceptible. Chevrolet continues to assemble 4000 units daily, 5 days. This leaves Ford fractionally ahead of Chevrolet in point of weekly output.

Slight reductions in schedules have been made by Studebaker, Willys-Overland, Oldsmobile, Hupp, Buick, Cadillac-LaSalle and Auburn-Cord, these not quite neutralizing the previously mentioned gains by Nash, Plymouth and Dodge. Unchanged operations are reported by Reo, Packard, Oakland-Pontiac, Hudson-Essex, Graham and De Vaux Hall. Franklin has resumed after a two-week shutdown.

General Motors Truck, at Pontiac, which is producing about 60 units daily, 5 days, is starting to build trailers.

Favor G. M. C. Common

Detroit prefers General Motors common stock over the securities of most other automobile manufacturers. In the first quarter, General Motors made within 14 cents of its quarterly common dividend of 75 cents. This was in spite of an extremely poor January, a mediocre February and a moderately good March.

Considering their bearing on second quarter earnings, both April and May were a great deal better than March, which was the best month of the first quarter, and June will not plumb the depths of January. Of course, this takes into consideration only the automobile activities of General Motors. Monthly sales of General Motors cars by dealers to consumers in the United States thus far in 1931 compare as follows with 1930:

	1931	1930
January	61,566	74,167
February	68,976	88,742
March	101,339	123,781
April	135,663	142,004
May	122,717	131,817
Five months	490,261	560,511

◆

A marine engineer points out that automobile engineers, in unifying the design of body and chassis, are doing what marine architects have been under the necessity of doing—making the body take up its share of structural duties the way deck housings on a liner contribute to the strength and rigidity of vessels . . . Fewer automobile sales but a relatively unchanged volume of financing indicates less cash per car is changing hands. For new and used cars, volume of automobile financing in the first four months of 1931 was $224,283,774; same period of 1930, $276,585,494; same period of 1929, $220,918,096 . . . . A new book, "Ford Men and Methods," states there are 6800 parts in Model A. . . . Pekin Foundry & Machine Co., Pekin, Ill., is manufacturing a free wheeling device for Fords . . . Department of commerce, analyzing world automobile stocks as of April 30, finds that stocks of American low-priced cars were normal in 20 countries, of medium and high-price cars normal in 15.

(Mirrors of Motordom will appear again next week.)

Obituaries

(*Concluded from Page* 31)

his patents were purchased by Capewell Horse Nail Co., Hartford, Conn., he was retained as consultant. He retired in 1912 but six years later he and others formed a partnership, purchasing Trefethen Brass Foundry, Taunton. This was dissolved in 1923, but in 1927 he established a new foundry at Taunton as Perkins Co. Inc.

□ □ □

Howard J. Mehl, 43, traffic manager, Diamond Chain & Mfg. Co., Indianapolis, died recently. He had been with the Diamond company 25 years.

□ □ □

Joseph J. Kwis, 74, president and general manager of Model Foundry & Machine Co., Findlay, O., with which he had been identified for 40 years, died June 1 at Cleveland.

□ □ □

Albert G. Bierbach, 78, retired Milwaukee inventor and manufacturer, died May 30. Born in Milwaukee he for many years conducted a metalworking plant with his brother, the late R. C. Bierbach. Among his inventions were a metal fire escape and an adjustable door hanging device for freight cars.

□ □ □

William Alfred Box, inventor and president of William A. Box Iron Works, Denver, died June 5. He was born in London, England, in 1873, and located in the United States 17 years later. After two years he became identified with the engineering department of Dillon Iron Works, Denver. Later he became a partner and in 1910 sole owner, changing the name to its present form.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRIDGEPORT, CONN. — Acme Shear Co., Hick street, has started construction of a 2-story plant addition, 31 x 47 feet.

BOSTON—U. S. post office department will lease station and machine shop to be altered at 735 Atlantic avenue. McLaughlin & Burr, 88 Tremont street, architects, have closed bids.

New York

BROOKLYN—Bureau of supplies and accounts, navy department, Washington, will receive bids June 23 on schedule 5909 for one motor-driven power hack saw machine.

BROOKLYN—H. M. Hillman, 188 Flatbush avenue extension, will build a manufacturing and storage unit at Flatbush avenue extension and Myrtle avenue. Cost, with equipment, is estimated at $40,000. Erling-Owre, 537 Hill Circle street, St. George, Richmond borough, New York, is architect. Company manufactures brass and copper products.

NEW YORK—Manhattan Auto Parts & Machine Corp. has been incorporated with $10,000 capital by S. W. Hartman, 280 Broadway.

NEWARK—Board of village trustees proposes to install pumping machinery in a sewage disposal plant for which a $100,000 bond issue has been arranged.

ONEIDA — Griffith-Chamberlain Inc., recently organized with $40,000 capital by Henry G. Griffith, 403 Ransom avenue, Sherrill, N. Y., and Frank W. Chamberlain, 417 Franklin street, Oneida, will operate a foundry for the production of stoves, furnaces and parts.

POUGHKEEPSIE—New York Power & Light Co., subsidiary of Niagara-Hudson Power Co., 15 Broad street, New York, plans to build a 266,000-kilovolt-ampere substation here. Bids will be taken soon.

New Jersey

CAMDEN — Universal Engineering Corp. has been incorporated with $100,000 capital by Herbert J. Koehler, to manufacture internal combustion engines.

HILLSIDE—Insulyte Inc. has been incorporated with $200,000 capital by W. Howard Demarest, 505 Orange street, Newark, to manufacture machinery.

Pennsylvania

ARNOLD — Board of education, C. L. Cotton president, proposes erection of a high school, including workshops, on Woodmont street. P. R. L. Hogner, Smithfield building, Pittsburgh, is architect. Bond issue of $150,000 has been provided.

CORRY—Fireless Locomotive Corp. is completing plans for going into production, initial operations to be undertaken in the plant of the Climax Mfg. Co. here. Harvey LeFevre is in charge.

CORRY—Storage unit of the Sherman Metal Products Co. recently was damaged by fire. Main plant was undamaged.

ERIE—General Electric Co., River road, Schenectady, N. Y., is having plans prepared for a new warehouse, 200 x 700 feet, for its works here.

JEDDO — Jeddo Highland Coal Co. will erect a new power house. Ballinger Co., Twelfth and Chestnut streets, Philadelphia, is architect. Cost, with equipment, is estimated at $50,000.

McKEESPORT—Board of education, Dr. J. B. Richey president, Ariel building, is planning construction of an industrial school, to include shops. C. R. Moffit, 304 Masonic Temple building, is architect and C. L. Woodridge, Fulton building, Pittsburgh, is engineer. Cost is estimated at $600,000. (Noted Jan. 29.)

PHILADELPHIA—American Alloys Co., 1939 Sergeant street, has purchased a 2-story plant located at 1340 East Berks street.

POTTSTOWN—City will erect a junior high school building at a cost of $425,000. Bond issue has been approved at a special election. Plans are by Hasness & Albright, Harrisburg, Pa.

CLARKS SUMMIT—R. B. Gibbs will take bids soon for construction of a hangar unit at Schultzville, near here, and improvements to an airport site. Total cost is estimated at $250,000.

Ohio

CINCINNATI—Heinss Spading Machine Co., 419 First National Bank building, advises through W. J. Schultz, agent, that the company is a patent holding corporation. Manufacturing corporation is to be organized for the manufacture of varying width, motor-driven spading machines. Early in 1932 bids will be asked of manufacturing concerns for quantity production of the machines. (Noted June 11.)

CLEVELAND — United Forgings Inc. has been incorporated with 250 no par shares by Merrick, Arter & Steward, Terminal Tower building.

CLEVELAND—Electric Storage Battery Co., Nineteenth street and Allegheny avenue, Philadelphia, will move its Cleveland assembly and storage units to a new building to be built at 6400 Herman avenue northwest. Structure will be 155 x 220 feet. Cost is estimated at $200,000. Contract has been awarded to H. K. Ferguson Co., Hanna building, Cleveland.

COLUMBUS—Board of trustees, Ohio state university, Carl E. Steeb secretary, recently noted as planning purchase of a generator and condenser, has secured appropriations from the state legislature, including the following items: Power plant equipment, $26,500; electrical engineering equipment, $25,000; fuel burning equipment for boiler, $25,000; surface condenser, $15,000; 4000 kilowatt turbogenerator, $70,000, and locomotive crane, $13,500. (Noted April 16.)

DAYTON—Brown-Bruckmeyer Co. Inc., Norwood avenue, has let contract to Henry Stock & Son, 55 Brandt street, for a plant addition for the manufacture of small motors, to be erected on Overlook street. Structure will be 90 x 500 feet. Cost is estimated at $100,000.

DELPHOS—Board of education, L. C. Allinger clerk, is taking bids for new boilers for installation in Jefferson school building.

RAVENNA—Browning Crane & Shovel Co. advises through M. P. Richard, superintendent, that no definite move has been made for installation of a steel furnace. Plans call for moving the present gray iron furnace to one of two buildings it now occupies and installation of an electric steel melting furnace. Annealing oven is only additional equipment included in plans. (Noted June 4).

Indiana

AUBURN—Riecke Metal Products Corp., Irvin H. Rieke president, has acquired a 4-story plant building formerly used as a unit of the W. H. McIntyre Co., in West Auburn, and will expand operations. Floor space available will be 80,000 square feet. Company manufactures pressed steel flanges, plugs and sealing rings used by oil refineries, and recently resumed operations after a fire, as noted March 5.

EVANSVILLE—Chamber of commerce is in contact with Aircraft Engineering Corp., Richard F. Hardin manager, Los Angeles, concerning proposed establishment of a plant here for the manufacture of land and seaplanes. About 60 workers would be employed.

MONTPELIER — National Steel Castings Co. is to expand plant facilities, including installation of an open-hearth furnace. Alternative plans call for construction at the present plant or at the plant of the Chemical Equipment Co.

Michigan

BIRMINGHAM—Leroy D. Weir has established a machine shop at 767 Bowers street.

DEARBORN—Thornton Engineering Co. Inc., 224 York boulevard, whose incorporation recently was noted, advises through J. Bannick, secretary, that the company is developing experimentally a four-wheel drive and brake tandem attachment for Ford trucks. Present work is by contract with machine shops and no plant or machinery will be purchased. In the future company will be in the market for light machinery for experimental work. Manufacturers' representatives are not to call except by invitation. Ray Thornton is president. (Noted June 4).

DETROIT—Premier Weighing Machine Co., 6230 Second boulevard, has been incorporated with $50,000 capital by Adolph A. Caille, 1735 Virginia avenue, to manufacture and deal in coin controlled weighing machines. Harry E. Knupp, David Stott building, also is interested.

DETROIT—General Electric Co., River road, Schenectady, N. Y., advises concerning plant proposed for erection here, that the company does not plan a branch plant, but will build a new and larger service shop, additional equipment to be installed. Upon completion of the new unit, former quarters will be used for warehousing. (Noted June 4.)

GRAND RAPIDS—Electric Sorting Machine Co., 302 Anderson building, recently organized by Lewis W. Tinkham and Hugo B. Hammerslag, plans to operate a local plant for the manufacture of electrical equipment.

MUSKEGON—Board of public works has plans under way for construction of a filtration plant for the municipal waterworks, to be erected at Bear lake. Boulay Harrison Co., 914 Summit street, Toledo, O., is engineer. Cost is estimated at $60,000.

SPARTA—Sparta Foundry Co. will expend $18,000 for improvements to production facilities. T. E. McFall is president.

Illinois

BARRINGTON — Herren Aeronautical Corp., recently organized, has leased plant space on North Cook street and is preparing for production of light planes. Wilson Herren and William Beckman are interested.

Southern States

BIRMINGHAM, ALA.—Plant of the Lynchburg Foundry Co. in Anniston, Ala., recently was damaged by fire, with loss estimated at $10,000.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids June 23 on schedule 5928 for 36 arc welding sets, with and without facilities for truck operation.

NATCHITOCHES, LA. — City will build a waterworks and light plant. Bond issue of $55,000 has been approved.

BALTIMORE — Smith & Monson have leased a plant at 425 Grindall street for the manufacture of soda fountains and accessories.

WAYNESBORO, MISS.—City council is having plans prepared for erection of a municipal light and power plant. Estimated cost, $69,500.

PENLAND, N. C.—Equipment to be installed in a new plant by Carolina China Clay Co. includes dryers, pumps, motors and hammer mills. Equipment cost is estimated at $50,000. W. F. Deneen is president.

CHATTANOOGA, TENN.—Southern Industries & Utilities Inc., W. G. Waldo engineer, has secured a permit for establishment of a hydroelectric plant with 94,000 horsepower capacity on the lower Tennessee river. Total cost is estimated at $25,000,000.

NEWPORT NEWS, VA. — Chesapeake & Ohio railway, C. W. Johns chief engineer, Richmond, Va., let contract to Allen J. Saville Inc., Richmond, for structures at the new coal pier here, to include shop building and boiler house.

NORFOLK, VA.—Plant of Eagle Iron Works recently was destroyed by fire with loss estimated at $50,000. Plant of Norfolk Iron Works also was destroyed.

NORFOLK, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids June 23 on schedule 5911 for one motor-driven angle bending roll machine.

TABSCOTT, VA. — Goochland Mining Corp., L. R. Cohn, Reading, Pa., president, will expand mining operations here and proposes future installation of machinery for ore handling and processing.

HUNTINGTON, W. VA.—Huntington airport, H. G. Meyes manager, is considering airport improvements, to include doubling of hangar size to accommodate 12 planes.

Missouri

ST. LOUIS—P-B Chain Mfg. Co. has been incorporated with $30,000 capital by G. A. Brown, Brentwood, Mo., to make anti-skid chains and other automobile accessories.

ST. LOUIS—Skinner Heating & Ventillating Co. has been incorporated by Harry Parker, Kirkwood, Mo., to manufacture unit heaters, air conditioning apparatus and heating systems.

ST. LOUIS—Board of public service, 208 City Hall, will receive bids until June 30 for a 400-kilowatt direct current and one 200-kilowatt alternating current, direct connected, steam engine driven generators for the power house at the municipal waterworks.

Texas

AMARILLO—City is considering erection of shops and office building to cost $300,000 at municipal field or English airport. Ernest O. Thompson is mayor. Project depends upon establishment of air depot here by Transcontinental & Western Air Inc.

FT. WORTH—Treasury department, James A. Wetmore acting supervising architect, Washington, plans to build a $3,000,000 federal farm near here. Shop buildings and a $30,000 power house are included in the plans.

Wisconsin

GRAFTON—City, R. P. Zaun clerk, will receive bids June 22 for erection of a pumping plant, pumping machinery, motors and controls and other items. Paul Clark, Appleton, Wis., is consulting engineer. Cost is estimated at $65,000.

MILWAUKEE — School board of Whitefish Bay, William A. Klatte secretary, will receive bids July 6 for first unit of a high school recently noted as planned. First unit will include boiler plant with oil burning equipment. Two industrial training shops will be erected. Total cost of project, $1,000,000. Plans are by M. Tullgren & Sons Co., 1234 North Prospect avenue. (Noted Feb. 19.)

OSHKOSH—Mondl Mfg. Co., manufacturer of shoe repair machinery, will build a 3-story addition, 44 x 50 feet, with a 1-story wing, 16 x 50 feet, to its plant at 40 Otter street. A. M. Mondl is president. (Noted June 11 under Mondl, Wis.)

RACINE—Board of water commissioners has rejected bids for a $660,000 waterworks pumping station and filtration plant addition and will call for new bids soon. Alvord, Burdick & Howson, 20 North Wacker drive, Chicago, are consulting engineers.

Minnesota

MINNEAPOLIS — Moorhead Machine & Boiler Co., 131 Holden street, will construct a 1-story plant unit and machine shop, 50 x 134 feet, to be built at Second avenue northeast and Ninth street. Approximate cost, $25,000. Company manufactures sand and gravel machinery and boilers.

WILLMAR—Trustees, state asylum, will purchase equipment for a power house, including boiler and engine. G. M. Orr Co., Baker building, Minneapolis, is engineer.

North Dakota

WAHPETON—Carl Stevens, superintendent Wahpeton Indian school, advises that proposed shop building recently noted will be 60 x 100 feet, to be equipped for auto mechanics, woodworking, sheet metal, machine shop and welding. (Noted June 11.)

Iowa

PELLA—City council has appropriated $45,000 for construction of a municipal light and power plant, including equipment.

Kansas

NEWTON—Atchison, Topeka & Santa Fe railroad, H. W. Wagner division engineer, Topeka, Kans., will install equipment in a rail mill addition and shops here. Cost is estimated at approximately $60,000.

Colorado

PUEBLO—Colorado Fuel & Iron Co., L. F. Quigg superintendent, is reported to plan alterations and improvements in steelworks and blast furnace facilities. Estimated cost, $250,000.

Wyoming

CHEYENNE — Union Pacific railroad, G. J. Adamson chief engineer, 1416 Dodge street, Omaha, Nebr., is preparing plans for construction of a roundhouse here, to cost approximately $200,000.

Utah

SALT LAKE CITY—Utah Gas & Coke Co. will erect compressor plants in connection with a new gas pipe line. Total cost of the project is estimated at $600,000. Company engineering department is in charge.

Pacific Coast

LOS ANGELES — Maine Machine Works, 701 North Main street, has let contract for a 1-story machine and pattern shop, 100 x 120 feet. Cost is estimated at $45,000.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids July 2 on schedule 5908 for three motor-driven engine lathes.

OAKLAND, CALIF.—G. R. Borrmann Steel Co., Fourth and Grove streets, is having plans prepared for construction of a 1-story plant unit. H. H. Bolin, Financial Center building, is architect and engineer. Cost is estimated at $35,000.

SAN DIEGO, CALIF.—Dual Aircraft Motors, Inc. Ltd., 2162 Belt street, advises Frank VanBezel, president and general manager, has secured machinery for the production of six 650-horsepower motors to be built to meet government tests. Commercial production is dependent upon award of government approved type certificate. (Noted May 21.)

PENDLETON, OREG.—State board of control, Salem, Oreg., will receive bids June 29 for a 250-horsepower boiler for the eastern Oregon hospital.

BRADY, WASH.—Machine shop of Y. J. Glenn recently was virtually destroyed by fire.

Dominion of Canada

EDMONTON, ALTA.—City council will call for bids soon for erection of a power plant addition. A. W. Vine is engineer.

GEORGETOWN, ONT.—Georgetown Porcelain Co. Ltd. will start work at once on remodeling plant and erecting new addition, 50 x 100 feet.

LUCKNOW, ONT.—Joseph E. Agnew, city clerk, is receiving bids for a gasoline engine-driven centrifugal pump, with a capacity of 625 gallons against a head of 200 feet.

TORONTO, ONT.—City council will build a $20,000,000 sewage disposal plant and system. H. P. Eddy, Metcalf & Eddy, 1300 Statler building, Boston, and Gore, Nasmith & Storrie, Confederated Life building, Toronto, have been appointed consulting engineers. R. C. Harris, city hall, is commissioner of works.

MONTREAL, QUE. — Rockbestos Products Corp., 285 Nicoll street, New Haven, Conn., proposes to build a plant here for the manufacture of insulated wire. (Noted March 19.)

MONTREAL, QUE. — Hume Steel Pipe Co. is reported to be considering plans for the erection of two processing plants in Canada, probably here and at Vancouver, B. C. Lewis Clifford is chairman of the company, London, Eng.

PRINCE ALBERT, SASK.—Canadian Utilities Ltd., 215 Sixth avenue west, Calgary, Alta., will improve facilities here with an expenditure of $30,000, the balance of a $200,000 expenditure to be carried over to 1932. Proposed changes will include new boilers, transformers, a new 5000-kilowatt unit and lines. H. W. Francis is purchasing agent.

New Trade Publications

DRILL PRESS VISE—Eagle Engineering Co., Springfield, O., has issued a leaflet illustrating a new type of drill press vise, manufacture of which it recently has taken over. Four points of excellence are shown in halftones.

LEAD ENCASING PRESS—John Robertson Co., 121 Water street, Brooklyn, N. Y., has issued a bulletin on its presses for encasing continuously electric wires and cables. It is illustrated.

NEW ORLEANS—New Orleans Association of Commerce has prepared the 1931 edition of its red book and buyers' guide, containing a wealth of information as to the commerce and industries of that city.

TRAMRAIL — A bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., illustrates the use of its tramrail in steel plants, in a current bulletin.

PYROMETERS—Brown Instrument Co., Philadelphia, in Catalog No. 1101, features its line of potentiometer pyrometers recently introduced. After an introduction on the nature and field of the potentiometer principle as applied to pyrometry its application by the Brown company and description of its features are covered.

TOOL STEELS—A leaflet by Darwin & Milner Inc., 1258 West Fourth street, Cleveland, is devoted to its patent air-hardening cobalt-chromium steel for use in dies and other tools where a high grade of tool steel is needed.

CORRUGATED PIPE—Two illustrated catalogs by the Armco Culvert Manufacturers association, Middletown, O., are devoted to use of corrugated iron pipe for storm sewers and to culverts. Advantages of this type of pipe are described and illustrations supplement the text.

OPEN-HEARTH CONTROL—Smoot Engineering Corp., 136 Liberty street, New York, has issued Bulletin No. 53 on its control for open-hearth furnaces. Diagrams and charts supply detailed information on the application of this device to achieve economical operation of steel-producing furnaces.

WELDED PRESSES—Allsteel Press Co., 12015 South Peoria street, Chicago, in Bulletin AS-31 describes its line of arc-welded steel plate punch presses. It covers methods of manufacture and advantages claimed for it and illustrates various types of presses and punches of steel plate construction.

BRIDGE STOP CONTROL—Electric Controller & Mfg. Co., Cleveland, suggests in a current bulletin the value of a positive dynamic braking bridge stop control for cranes, as a safety measure. Its advantages are listed and operation is explained.

SPEED REDUCERS—Catalog No. 136 by the D. O. James Mfg. Co., 1120 West Monroe street, Chicago, covers its power-saving products, including planetary spur gear, medium and heavy duty worm gear, continuous-tooth herringbone gear speed reducers, cut spur, straight and spiral bevel and other gears, sprockets, racks, flexible and universal couplings.

SPECIAL STEEL — Stroh Process Steel Co., Pittsburgh, has issued a booklet on its special steel by which a hard wearing surface is produced on a soft steel center for rolling mill pinions, gears, hot shear blades, coupling boxes and spindles, twist guides, bending boxes and other purposes. The booklet is illustrated and advantages of this steel are described.